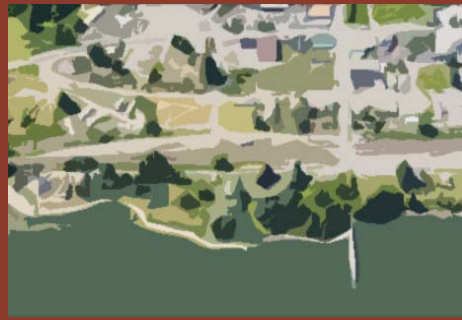


STEVENSON

SHORELINE MASTER PROGRAM



City of Stevenson

SEPA Review Draft Inventory & Characterization Report

November 2018

Prepared by the Stevenson Planning Department &



Ecology Grant # G1200-044

Tasks 2.3



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1.0 Introduction

15 The purpose of this study is to conduct a baseline inventory of shoreline conditions within and adjacent to the City of Stevenson, Washington. This study includes an inventory and analysis of shoreline conditions related to land use, public access, environmentally sensitive areas and fish habitat, including habitat for species listed as threatened or endangered under the federal Endangered Species Act (ESA) (a comprehensive list of abbreviations and acronyms are found in Appendix A). More specifically, the shoreline inventory collected existing plans, surveys, studies, inventories, and other information applicable to the City's shorelines. In addition, Washington Administrative Code (WAC) 173-26-150 allows the City to pre-designate the shorelines of urban growth areas that are located outside of existing City boundaries, which the City has elected to do for areas in Skamania County. The study also conducted a physical inventory of land use, shoreline modifications, and public access and used the information that resulted to evaluate and characterize shoreline functions and ecological processes and to recommend enhancement and restoration projects.

25 This characterization report documents those ecosystem-wide processes that contribute to the structure and functions of Stevenson's shorelines and compares them to the human-based modifications that are working to change the same structure and functions. The descriptions in this report will be the basis upon which the City can continue the comprehensive update of the 1977 Shoreline Management Program (SMP), a revision process required of the City by the Shoreline Management Act (SMA), Revised Code of Washington (RCW) 90.58, and Shoreline Master Program Guidelines, WAC 173-26, and Washington State Department of Ecology (Ecology) Grant G1200044. This report is intended to summarize the existing conditions for a wide audience and is not intended to be highly technical or analytical.

The information is organized in the following sections:

- 35 • **Section 1** introduces the report, defines and identifies the City's shoreline jurisdiction and the relationship of the City's SMP to other plans and programs, and describes the methods used to conduct the shoreline inventory and characterization.
- 40 • **Section 2** goes into detail on the ecosystem-wide processes that have set the stage on which Stevenson has been built. This section characterizes the geology, climate, hydrology, and game-changing processes associated with the Bonneville Dam, and describes the structures these processes have left behind.
- 45 • **Section 3** discusses what ecological functions are provided by the processes and structures along Stevenson's shorelines. The functions discussed in this section are categorized according to their importance to water quality, water quantity, and habitat. This section also introduces the indicators that will be used to measure ecological functions over time.
- 50 • **Section 4** analyzes how the processes, structures, and functions interact on a reach-by-reach basis along local shorelines. The information in this section is organized in tables characterizing the existing conditions of each indicator, the likelihood of impending land use changes along the reach, and the overall contribution of each reach to the ecological functions of the shoreline.
- **Section 5** analyzes the current uses of Stevenson's shorelines, defines whether these uses are preferred or water-oriented, analyzes potential future uses of shoreline areas, and recommends ways to accommodate such uses in the future.

- **Section 6** consists of preliminary shoreline environmental designation (SED) recommendations based on existing land uses, zoning, current ecological functions, and existing shoreline environmental designations.

55 The City will use this report in the next steps of the SMP update process, which will include developing proposed shoreline environment designations; preparing draft SMP goals, policies, and regulations; developing a restoration plan to take advantage of opportunities to improve degraded conditions in the City's shoreline jurisdiction; and evaluating anticipated cumulative impacts of the new program's implementation.

60 **1.1 Study Area Boundary (Shoreline Jurisdiction)**

The City's preliminary shoreline jurisdiction is identified in Appendix C, Map 1 and will be refined in the City's final Shoreline Management Program. This map includes the shorelines and shorelands of the Columbia River, Rock Creek, and a dam-flooded inlet of the Columbia called Rock Cove. These waterbodies and adjacent lands represent the "shorelines of the state," which include "shorelines", "shorelines of statewide significance," and "shorelands" in Stevenson, as are further described below. As established by state law (RCW 35A.21.090 and 35.21.160) the waterward extent of the City's shoreline jurisdiction is the mid-line of the Columbia River, beyond the City limit boundary that mostly follows the land's edge. This report also includes information on the Columbia River and Rock Creek reaches and another dam-flooded inlet of the Columbia called Ashes Lake that currently lie outside the City's 2015 jurisdiction but within the boundary of the urban area established in the Columbia River Gorge National Scenic Area (NSA). Including an analysis of these additional areas will allow the City to predesignate lands in the SMP so additional territory can be annexed unfettered by jurisdictional issues over shoreline management. While the City is opting to exercise its authority to predesignate, these areas remain under the jurisdiction of Skamania County until annexation occurs. The area outside the City's 2015 jurisdiction represents nearly 4.5 miles of the 10 total miles of shoreline characterized in this report.¹

1.1.1 Regulatory Overview and Definitions

This report limits its discussion to the Columbia River, Rock Cove, and Rock Creek based on the definitions and standards established by the state in the SMA and WAC.

80 **Shorelines of the State** – The SMP update process begins with the identification of "shorelines of the state" which comprise the geographic area where the SMA applies within a local jurisdiction. Shorelines of the State include "shorelines" and "shorelines of statewide significance.

Shorelines – "Shorelines" are described as certain water areas of the state along with the lands underlying them. The SMA applies to shorelines as follows:

- All marine waters.
- Rivers and streams with more than 20 cubic feet per second (cfs) mean annual flow.
- Lakes and reservoirs greater than 20 acres in area.
- Associated wetlands and river deltas.
- Shorelands adjacent to these waterbodies.

¹ *Recommendation #1-1 for SMP Update:* Evaluate and predesignate lands outside of the 2014 city limits as part of the final SMP.

Shorelines of Statewide Significance – The SMA provides special emphasis on certain waterbodies in addition to those described below. The Columbia River, as a river having a mean annual flow greater than 1,000 cfs, is considered a shoreline of statewide significance and is joined by others in the following categories:

- The harbors, bays, estuaries, and inlets of the Pacific Ocean.
- Several named and unnamed deltas, bays, and passages of the Puget Sound.
- Any lakes and/or reservoirs with a surface area greater than 1,000 acres.
- Any Western Washington river having a mean annual flow greater than 1,000 cfs.
- Any Eastern Washington river having a mean annual flow greater than 200 cfs or a drainage area greater than 300 square miles.
- Associated wetlands and river deltas.
- Shorelands adjacent to these waterbodies.

Shorelands – “Shorelines of the state” include more than just the waterbodies meeting the threshold. Its definition includes all lands extending landward for 200 feet from the ordinary high water mark (OHWM) as well as floodways and their landward floodplains within 200 feet.

Ordinary High Water Mark – The OHWM is used as the basis for identifying shoreline locations and can be found by examining the bed and banks of a waterbody to ascertain where the presence and action of waters are so common and usual that they have marked the land as distinctly different from the abutting uplands. Because the OHWM is not a fixed elevation and subject to change over time, it is difficult to map its location precisely. The shoreline jurisdiction depicted in Map 1 should be taken to represent the general location of shorelines in Stevenson, and the regulatory provisions established during this SMP update should require a case-by-case verification of the OHWM.²

Optional Areas – The City’s shoreline jurisdiction may also include areas outside of those mandated through the SMA – municipalities may elect to include certain optional areas as well. The most common cases involve the inclusion of 100-year floodplains and the buffers required to protect critical areas. Critical areas include aquifer recharge areas, frequently flooded areas, geologic hazard areas, habitat areas, and wetlands which are now required to be regulated by the City under the state Growth Management Act (GMA). Extending the shoreline jurisdiction to these areas increases efficiencies of the permitting process and minimizes confusion about what and how many regulations apply within shoreline areas.

1.1.2 Preliminary Shoreline Jurisdiction

Stevenson’s preliminary shoreline jurisdiction and predesignation areas are depicted in Map 1 and is based on the minimum jurisdiction for shorelines of statewide significance (Columbia River), shorelines (Ashes Lake, Rock Cove, and Rock Creek), associated wetlands, and their shorelands (areas within 200 feet of the OHWM of these waterbodies). Optional areas associated with wetland buffers and the 2007 Piper Road landslide are included in this preliminary determination of shoreline jurisdiction for future evaluation and consideration for

² *Recommendation #1-2 for SMP Update:* Include regulatory provisions requiring the OHWM be determined at the time of project review so that it is always based on the most recent information.

125 inclusion in the final SMP. The information in this report and the will of the public as it is identified during the
update process will help guide the decision about the inclusion of the optional areas.³

1.2 Methodology

130 Ecology provided the City with guidance for conducting this inventory and characterization through
meetings, correspondence, and written handbooks. Stevenson’s Shoreline Inventory and Characterization
Report incorporates this guidance and reviews shorelines through a lens involving Ecosystem-Wide
Processes, Shoreline Ecological Functions, and Reach-Scale Indicators.

135 Through this lens, Ecosystem-Wide Processes refer to the dynamic physical and chemical interactions that
form, maintain, and change natural landscapes. These processes are fairly predictable, and changes to them
occur relatively gradually or with a great deal of human influence. As the outcome of these broad, landscape-
scale processes, Shoreline Ecological Functions occur at the middle scale and are more prone to direct
influence by human actions but the services they perform continue to operate to a greater or lesser extent
despite these influences.

140 At the finer level, Reach-Scale Indicators are easily measured proxies used to describe how well or poorly
Ecosystem Processes and Ecological Functions are working. Such indicators are helpful both because they
describe performance of multiple and interacting Ecological Functions, and because they are variable and
highly subject to changes based on human influence. Discreet and manageable, Reach-Scale Indicators can
be addressed more precisely at the site-scale during a permitting process, and their variability can therefore
be made more predictable. As a result, human investments in shoreline areas can continue with greater
certainty, and subject to changes based on the slower moving processes of the wider ecosystem and
economy. This “status quo” of existing conditions is what Ecology requires us to maintain with the phrase “No
145 Net Loss of Ecological Functions”. The characterizations of this report describe the current state of these
processes, functions, and indicators so that Stevenson can protect local assets and achieve Ecology’s
standard.

Additional description of the methodology used to characterize specific reaches is included in ICR Section
4.0, including the qualitative scale used for each reach-scale indicator.

³ *Recommendation #1-3 for SMP Update:* Evaluate and consider extending shoreline jurisdiction during later stages of the SMP update, paying special attention to the benefits of eliminating redundancy in the permitting process.

Table 1.2-1 Stevenson’s Ecosystem-Wide Processes, Ecological Functions, and Reach-Scale Indicators

Characterization Methodology		Ecosystem-Wide Processes	Geology	Climate	Hydrology	Bonneville Dam
				Shoreline Ecological Functions		Reach-Scale Indicators
				Water Quality Functions	Sediment Transport	303(d) Listings, Fish-Blocking Culverts, Impervious Surface Area, Permanently Protected Areas, Riparian Vegetation, Shoreline Stability, Urban Runoff, Wetland Acreage
					Nutrient & Toxic Filtration	303(d) Listings, Available Floodplain Area, Impervious Surface Area, Permanently Protected Areas, Riparian Vegetation, Setbacks to OHWM, Urban Runoff, Wetland Acreage
				Water Quantity Functions	Temperature Regulation	303(d) Listings, PHS Listings, Permanently Protected Areas, Riparian Vegetation, Setbacks to OHWM, Urban Runoff
					Water Storage & Flow Regulation	Available Floodplain Area, Fish-Blocking Culverts, Impervious Surface Area, Overwater Roads & Structures, Riparian Vegetation, Urban Runoff, Wetland Acreage,
			Habitat Functions	Input of Organics & LWM	Available Floodplain Area, Impervious Surface Area, PHS Listings, Permanently Protected Areas, Riparian Vegetation, Shoreline Stability	
				Connectivity to Suitable Habitat	Fish-Blocking Culverts, Impervious Surface Area, Overwater Roads & Structures, PHS Listings, Permanently Protected Areas, Riparian Vegetation, Setbacks to OHWM, Shoreline Stability, Wetland Acreage	

1.2.1 Data Sources

155 The data used in this characterization of the City’s shorelines comes from the most current, accurate,
complete, applicable and available information from existing reports, site visits, and remote sensing data. A
160 number of state and federal agency data sources and City records, maps, aerial photos, and technical reports
were compiled as the basis for the shoreline inventory. Section 7.0 lists the data sources. The following were
among the most helpful:

- Stevenson Comprehensive Plan (City of Stevenson, 2013)
- 160 • Biological Assessment of the Effects of the Rock Creek Debris Removal, Bridge Protection and Fish
Habitat Improvement Project (SWCA Environmental Consultants, 2007)
- Lower Columbia Fish Recovery Plan (Lower Columbia Fish Recovery Board, various dates, including
2010)
- Wind/White Salmon Watershed (WRIA 29) Level 1 Technical Assessment (Envirovision, 2003)
- 165 • Rock Creek Watershed Analysis (U.S. Forest Service, 2000)
- Rock Cove Environmental Evaluation and Comprehensive Plan (Fishman Environmental Services,
1997)

1.2.2 Shoreline Reaches

170 Map 1 displays the shoreline waterbodies in the Stevenson area. The Columbia River is a shoreline of
statewide significance with annual flows over 1,000 cfs, Rock Creek, Rock Cove and Ashes Lake are shorelines
with annual flows of more than 20 cfs or an area of greater than 20 acres. Therefore, the Columbia River,
Rock Creek, Rock Cove, and Ashes Lake and their associated “shorelands” comprise the geographic area
where the SMA applies in the City.

175 To assess the physical and biological resources of the shorelines of these waterbodies, this inventory and
characterization breaks them into seven relatively homogeneous and manageable units based on geographic
location. The character of these reaches has been assessed and is described generally according to the level
of ecological functions they provide and by existing and projected land uses. Table 1.2-2 describes the reach
boundaries with greater detail found in the text sections for each reach.

Table 1.2-2 Shoreline Waterbodies & Reach Designations

Streams & Rivers	Reach Name	Description	Approximate Length	
			Predesignated	City Jurisdiction
Columbia River	Reach 1— Pre-designated East Urban Area	North bank of river from the eastern Urban Area boundary at the mouth of Nelson Creek downriver to city limits at the mouth of Kanaka Creek. Note: While the shoreline of this reach is outside of city limits and pre-designated, some shorelands and associated wetlands are within the City's current shoreline jurisdiction.	5,550 LF	0 LF
	Reach 2— Downtown Waterfront	North bank of river within city limits from the mouth of Kanaka Creek downriver to the mouth of Rock Creek	0 LF	4,175 LF
	Reach 3— Pre-designated West Urban Area	North bank of river from the mouth of Rock Creek downriver to the Urban Area boundary at SR 14 west of Stevenson Co-Ply site.	8,000 LF	0 LF
Rock Creek	Reach 1—City Reach	West/South bank of stream from its mouth upstream to city limits at Ryan Allen Road. East/North bank of stream from its mouth upstream to city limits near Lasher Street.	0 LF	10,375 LF
	Reach 2— Pre-designated Upper Rock Creek	West/South bank of stream from Ryan Allen Road upstream to Urban Area boundary. East/North bank of stream from city limits near Lasher Street upstream to Urban Area boundary.	5,325 LF	0 LF
Streams & Rivers Subtotal			18,875 LF (3.6 mi)	14,550 LF (2.8 mi)
Lakes	Description		Approximate Length	
			Pre-designated	City Jurisdiction
Rock Cove	Rock Cove—City Reach	Entire bank of lake, islands, and SR 14/ railroad berm.	0 LF	18,800 LF
Ashes Lake	Ashes Lake— Pre-designated	Extreme Northeast end of Ashes Lake within Urban Area boundary.	425 LF	0 LF
Lakes Subtotal			425 LF (0.1 mi)	18,800 LF (3.6 mi)
TOTAL			19,300 LF (3.7 mi)	33,350 LF (6.3 mi)

180

1.3 Relationship to Other Plans and Programs

The SMA requires local governments and state agencies to review the plans, regulations, and ordinances applying to areas of shoreline jurisdiction and modify them to ensure they are consistent with the SMP. Waterfront lands are regulated by various local, state, and federal policies, and the SMP update needs to ensure these are integrated to avoid inconsistencies or conflicts between the regulations.

185

1.3.1 Local Plans and Programs

Stevenson's SMP intersects with its comprehensive plan, municipal code, and other regulatory plans and programs to manage and regulate development in shoreline areas. Local plans and regulations that relate to shoreline management include those discussed in the next sections.

190 **Comprehensive Plan** – The Stevenson Comprehensive Plan (April 2013) uses the cornerstone principles of
high quality of life, natural/scenic beauty, healthy economy, and active waterfront to frame goals for growth,
development, and change in the city. The plan contemplates the use of area plans, such as the SMP, as
components of Stevenson's overall system of plans and one way to implement its strategies. The
comprehensive plan is intended to be acted upon, and Goal 4A addresses the waterfront when it lays out a
195 future where "the waterfront is an extension of the downtown core and a place where people live, work, and
play." The objectives and tactics adopted to advance the City toward that goal provide instrumental guidance
for the SMP update, as do the future land use map and several objectives and tactics associated with other
goals in the comprehensive plan. The SMP update process will also provide a feedback loop for the
continued relevance of the 2013 comprehensive plan, and that plan should be revisited and amended to
200 reflect the new SMP as an area plan to be implemented under the aegis of the comprehensive plan.⁴
Appendix B of this report provides a complete list of current comprehensive plan statements, objectives, and
tactics that interrelate with the SMP.

Zoning Code – The City and County zoning codes provides use, design, and procedural standards adopted
for all areas of the City, including those within the shoreline jurisdiction. The City's zoning code contains clear
205 but imperfect attempts to reconcile its design-based regulations with the existing SMP, especially within the
Commercial (C1), Commercial Recreation (CR), and Public Use & Recreation (PR) districts. However, there is
no evidence of any attempts to reconcile the use-based regulations or procedural requirements of the
existing SMP and zoning code. The SMP update process and annexation of property will provide
opportunities to better align shorelines policies and procedures with those of the zoning code.⁵

210 **Critical Areas Code** – Like the SMP, the state mandates that the City adopt regulations to protect what it has
deemed "critical areas," including aquifer recharge areas, frequently flooded areas, geologically hazardous
areas, habitat areas, and wetlands. This mandate came as part of the GMA, and the overlapping regulatory
requirements of critical areas protection and the SMA have been troublesome for many municipalities and
state agencies. These tensions have required guidance from the state courts, and the City's SMP update will
215 need to follow that guidance, which means that the City may either refer to the existing critical areas code in
the SMP or adopt specific critical areas provisions to apply when they exist in shoreline areas, or a
combination thereof.⁶

State Environmental Policy Act (SEPA) – The State Environmental Policy Act has been adopted locally as
SMC 18.04 – Environmental Policy. This program reviews all actions taken by the City to determine whether

⁴ *Recommendation #1-4 for SMP Update:* SMP update should include a list of desirable comprehensive plan changes to bring the two documents into alignment. Specific recommendations should be made regarding the 1975 SMP's references in Chapter 2 and Goal 4A.

⁵ *Recommendation #1-5 for SMP Update:* Evaluate and consider inclusion of the shoreline use, design, and procedural regulations adopted as part of the SMP Update as a component of a more unified development code along with those of the Zoning Code.

⁶ *Recommendation #1-6 for SMP Update:* Consider methods to integrate and reduce redundancy between Critical Areas and Shorelines permitting, especially regarding riparian habitat and wetland areas.

220 the action is likely to have a significant adverse environmental impact. Action is very broadly defined to
include, among others, city-funded construction projects, policy adoption, and permitting of private projects.
The City's decision to take such actions must be mindful of whether projects will have a significant impact,
whether their impacts can be mitigated, and the full scope of the impact if unavoidable. Checklists associated
with SEPA are required in all areas of the city, including those within shoreline jurisdiction.⁷

225 **1.3.2 State and Federal Plans and Programs**

The City's SMP must also be compatible with state and federal regulations and programs that relate to
shoreline management. State and federal regulations and programs that intersect with Stevenson's SMP
update are listed alphabetically below.

230 **Bonneville Dam** – The Bonneville Lock and Dam Project and the Bonneville Power Administration (BPA) are
components of a federal water resource management program designed to manage flood risk, generate
power, improve water quality, provide irrigation, and preserve and enhance fish and wildlife habitat,
recreation, and navigation on the Columbia River and some of its tributaries. Bonneville Dam, located 6 miles
downstream from Stevenson, is the earliest in a system of 31 hydropower dams generating power which the
BPA distributes throughout the Pacific Northwest. To balance the diverse needs of this water resource
235 management program, the U.S. Army Corps of Engineers (USACE) operates Bonneville Dam and the
Columbia River as a system, raising and lowering water levels in the Bonneville Pool based on complex
projections of the system's water availability and power generation demands. This artificial control has a
great effect on the water and sediment regime of the City's shoreline areas as will be discussed in section 2.4.

240 **Clean Water Act (CWA)** – Section 401 of the federal CWA requires projects obtain certification from the
state regarding compliance with water quality standards and other aquatic resource protections under
Ecology's purview. Section 404 of the CWA regulates the discharge of dredged or fill material into waters of
the United States. Any project that proposes such impacts in waters of the United States, including special
aquatic sites such as wetlands, must obtain a permit from USACE.

245 Under the authority of the CWA, the Environmental Protection Agency (EPA) authorizes Ecology to issue
permits under the National Pollutant Discharge Elimination System (NPDES). This system covers a wide range
of projects that discharge water. They are referred to as point source projects and include wastewater
treatment plants, industrial facilities, and large construction sites. The program also covers a graduated
system of municipal separate storm sewer systems (MS4s) to eliminate pollution from stormwater runoff. Two
250 phases of this program have been implemented to cover medium and large cities, but because of
Stevenson's size and location, its stormwater system is exempt from MS4 regulation. Ecology's Stormwater
Management Manual for Western Washington (2014) provides useful technical information and alternative
low impact development (LID) methods for managing runoff to help minimize pollution even in smaller
communities.⁸

255 **Columbia River Gorge National Scenic Area Act** – Congress passed the Columbia River Gorge National
Scenic Area Act in 1986 to protect and enhance the scenic, cultural, recreational, and natural resources of the

⁷ *Recommendation #1-7 for SMP Update:* Develop shoreline management policies that will help ensure projects avoid determinations of significant adverse environmental impacts under the SEPA.

⁸ *Recommendation #1-8 for SMP Update:* Evaluate and consider LID methods identified in the 2014 stormwater manual as appropriate to limit net loss of shoreline ecological functions.

Columbia River Gorge – the National Scenic Area, or NSA. The Act also seeks to protect and support the economy of the Gorge by encouraging growth within existing urban areas like Stevenson. Unlike Washington’s GMA, the Act is focused far more on *resource management* than *growth management*. Whereas the statewide GMA establishes urban growth areas that are expected to continually expand to meet the population management demands of projected 20-year growth, the NSA Act established urban areas within which all industrial development and most commercial and residential development are expected to occur. Minor revisions to the NSA boundaries are permissible, but not at the expense of the scenic resources the Act was established to protect. While the Act severely limits the types of development that can occur outside the urban areas, it places no planning requirements or development restrictions on the City. Instead, it increases the pressure for Stevenson to accommodate the growth and uses prohibited elsewhere in the NSA. Stevenson’s SMP will be a key ingredient of the place-based solution required to absorb the added development pressures created by the Act.

Endangered Species Act (ESA) – The federal ESA was adopted in 1973 as a regulatory measure to prevent the extinction of plant and animal species. By establishing a “consultation” process, the Act provides for the conservation of species that are endangered or threatened throughout all or a significant portion of their range. During consultation, the National Marine Fisheries Service (NOAA Fisheries) (NMFS) and/or US Fish and Wildlife Service (USFWS) review project proposals to ensure they do not result in the “take” of a listed species. Take is broadly defined as any action that would “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such action.” Agency feedback must then be accommodated by the project.

Hydraulic Project Approval (HPA) – The state HPA program applies to any construction activity that would alter the bed or bank of a water of the state. The program is administered by the Washington Department of Fish and Wildlife (WDFW). All projects covered by the requirements must submit permit applications to show that construction is done in a manner that prevents damage to the state’s fish, shellfish, and their habitats.

Magnuson-Stevens Fishery Conservation and Management Act – This national act protects fish and fisheries in the high seas and the anadromous species spawning in the rivers of the United States. The act was originally adopted in 1976, and its focus on the nutritional, economic, and recreational value of fish species differentiates it from the ESA. Whereas the latter seeks to prevent the extinction of the species it protects, the Magnuson-Stevens Act seeks to maintain stocks of the species it protects to ensure optimum ongoing yields for human consumption.

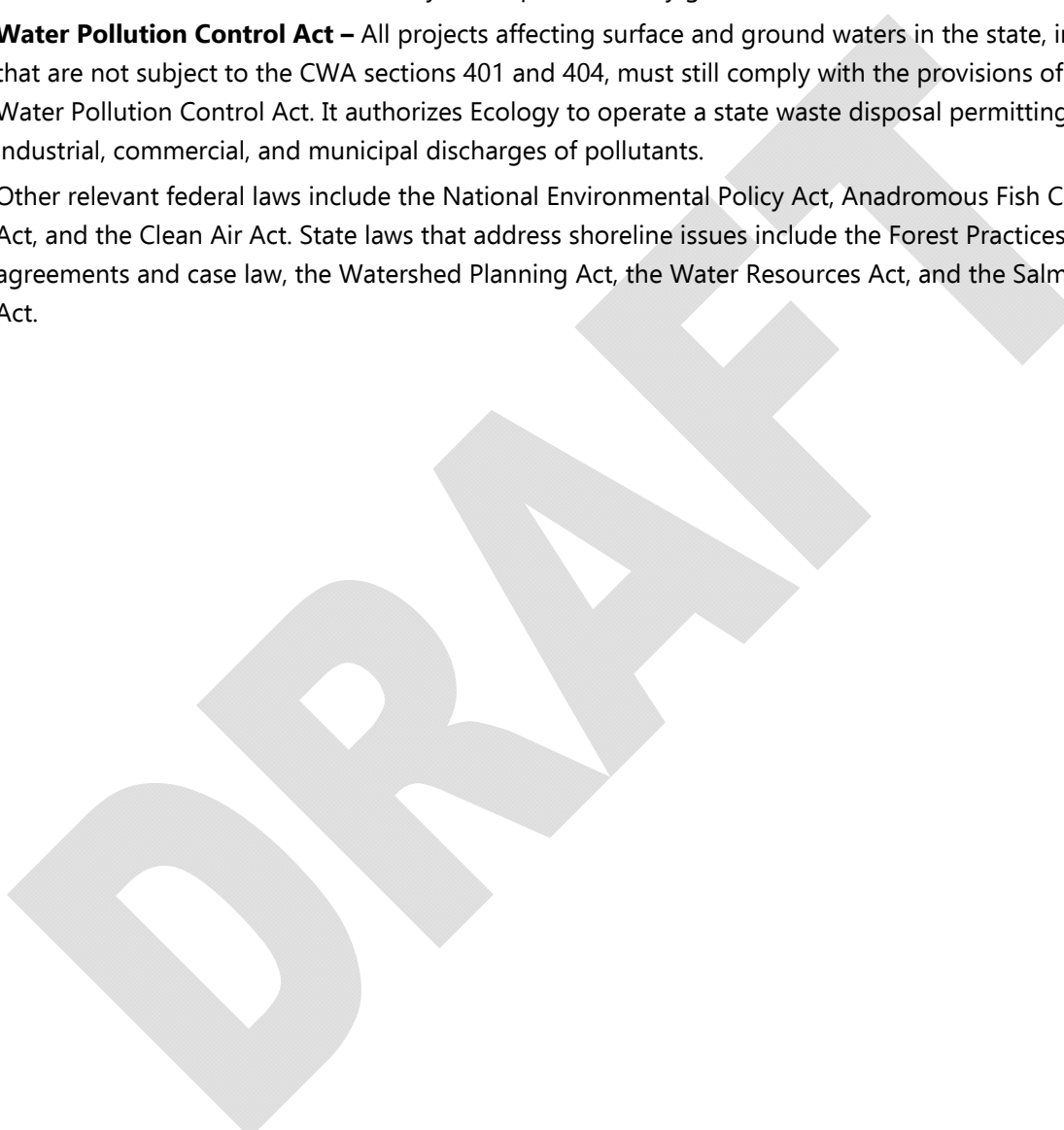
Migratory Bird Treaty Act – Originally adopted in 1918 as a treaty with Canada, this federal law has been updated based on additional treaties with Mexico, Japan, and Russia. The Act seeks to prevent the unlicensed killing, capturing, and commodification of migratory birds and their products (feathers, eggs, nests, etc.). The Act also authorizes the Secretary of the Interior and the President to adopt suitable regulations regarding the methods by which certain species of migratory birds may be hunted, captured, or commodified. The Migratory Bird Treaty Act does not deal specifically with bird habitats and is primarily implemented through state game wardens and hunting license provisions.

Rivers and Harbors Act of 1899 – The USACE reviews projects for compliance with Section 10 of the federal Rivers and Harbors Act of 1899, which seeks to prohibit the unauthorized obstruction or alteration of navigable waters of the United States (waters subject to the ebb and flow of the tide and/or are presently used, previously used, or subject to future use to transport interstate commerce) without a USACE permit.

300 **Washington Lower Columbia Salmon Recovery and Fish & Wildlife Subbasin Plan** – An integrated plan
satisfying the requirements of several state, regional, and federal programs. This plan is adopted by NMFS as
a non-regulatory guidance document. The purpose of the plan is to restore the region’s threatened fish
species to healthy, harvestable levels and to protect and enhance other species adversely affected by human
actions. The plan provides site-specific management actions necessary for the conservation and survival of
threatened species, measurable criteria that be used to delist recovered species, and the project inventories,
priorities, and cost estimates necessary accomplish recovery goals.

305 **Water Pollution Control Act** – All projects affecting surface and ground waters in the state, including those
that are not subject to the CWA sections 401 and 404, must still comply with the provisions of the state’s
Water Pollution Control Act. It authorizes Ecology to operate a state waste disposal permitting system for
industrial, commercial, and municipal discharges of pollutants.

310 Other relevant federal laws include the National Environmental Policy Act, Anadromous Fish Conservation
Act, and the Clean Air Act. State laws that address shoreline issues include the Forest Practices Act, tribal
agreements and case law, the Watershed Planning Act, the Water Resources Act, and the Salmon Recovery
Act.



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2.0 Ecosystem-Wide Processes

Ecosystem-wide processes are the dynamic physical and chemical interactions that form and maintain natural landscapes. These processes occur over large landscapes that include both shoreline areas and the wider watershed draining to the shoreline. The SMA requires local jurisdictions to consider the ecosystem-wide processes that are at play in shaping the structure of shorelines.

This section of the shoreline inventory and characterization report describes ecosystem-wide processes and the structures they have created. It focuses on the swift and cataclysmic nature of the ecosystem-wide processes at work in Stevenson and the Columbia River Gorge. The natural forces of geology, climate, and hydrology are especially visible in Stevenson. They are characterized below because of the massive scale of their impacts on Stevenson’s shorelines and because they demonstrate the complexity of developing place-based solutions to problems that can change overnight because of causes that are beyond Stevenson’s ability to influence.

2.1 Geologic Processes

In a place known for its jaw-dropping waterfalls and picturesque cliff faces, geology is *the* story of the Columbia River Gorge. The characters in this story include the joints between layers of sedimentary and igneous rock units, the lifting and folding of the ground caused by the shifting of the Earth’s plates, and the persistent forces of gravity, water, and their conflicting relationship with beauty and destruction. The descriptions in this section quite literally set the stage upon which Stevenson and the ecosystem-wide processes play out.

2.1.1 Rock Units

The oldest and deepest geologic formation in the Stevenson area is called **the Ohanapecoh Formation**. This sedimentary layer is rarely visible from the surface, but some layers of its tuffs (igneous rock that forms from the debris ejected by explosive volcanic events), breccias, conglomerates, sandstones, and claystones (various types of sedimentary rocks composed of rock fragments cemented within a matrix of smaller particles) are exposed in the Wind River canyon beneath and upstream of Carson’s Conrad Lundy (“High”) Bridge to the east of Stevenson.

The Stevenson Ridge Volcanics (sometimes referred to as Stevens Ridge Volcanics) is an igneous layer of basaltic-andesite lava and breccias flows visible in several places near Stevenson, especially along the shorelines of the Columbia River and in cuts for BNSF railroad tracks. This layer is highly permeable along its fractures and columnar joints and water percolates relatively freely through the Stevenson Ridge Volcanics, where it is then impeded by the relatively impermeable layer of thick clay-rich paleo-soil horizon that separates the Stevenson Ridge Volcanics from the underlying Ohanapecoh Formation.

The Eagle Creek Formation is the thickest rock unit in the Stevenson area and overlies the Stevenson Ridge Volcanics. This sedimentary formation consists of volcanic conglomerates, sandstones, and mudstones

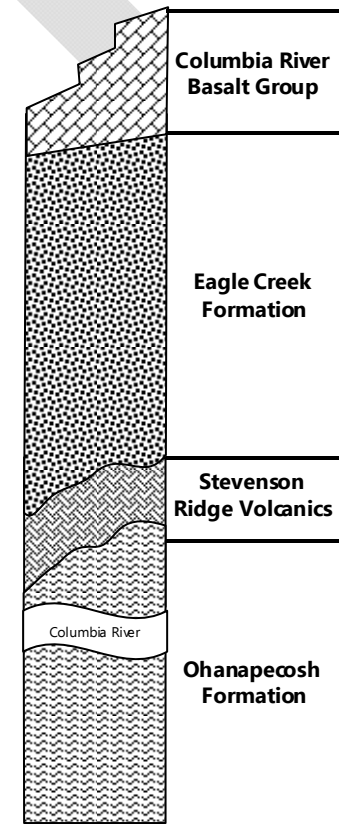


Figure 2.1-1 Generalized Stratigraphic Column

Figure Credit: Ben Shumaker, based on Berri & Korosec (1983) & Yinger (2007)

365 deposited as fluvial sediment drained from a volcanic terrain. This layer is visible in the stratified cliff faces of Red Bluffs and Table Mountain to the west of Stevenson. A thick clayey soil horizon separates the Eagle Creek Formation from the underlying Stevenson Ridge Volcanics and impedes the movement of water from one layer to the next.

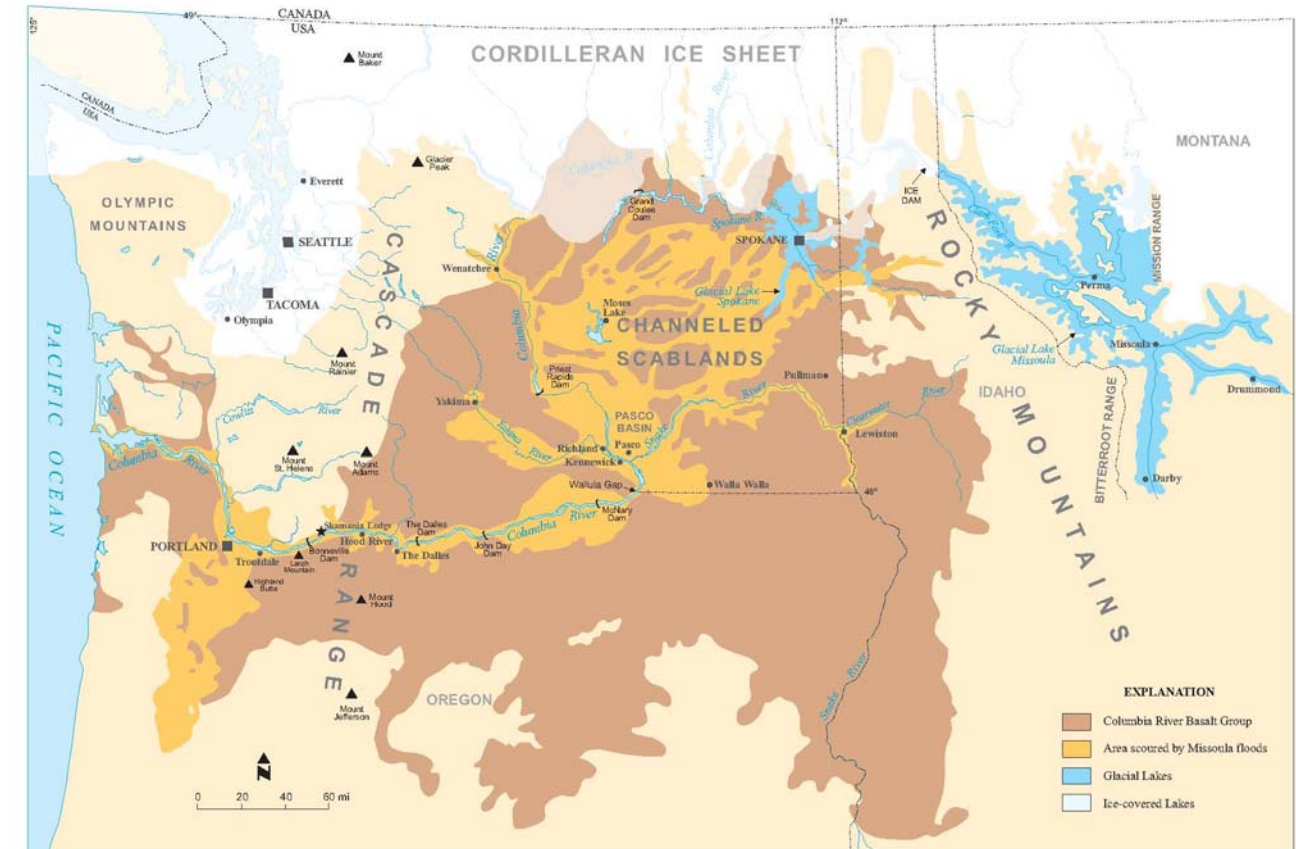


Figure 2.1-2 Columbia River Basalt Group & Missoula Floods

Figure Credit: Norman & Roloff (2004)

370 **The Columbia River Basalt Group**, typically the darling of the Columbia River Gorge’s geologic story, provides the uppermost and—at nearly 17 million years old—the youngest rock unit found in the Stevenson area. This series of basalt flows flooded out of eastern Washington and Oregon at an average rate of 3 miles per hour covering more than 100,000 square miles of territory with molten rock. Filling in the ancestral Columbia River valley on their way to the Pacific Ocean, these flows of rock pushed the river itself to the northern margin of the trough. Nowhere is this more visible than in the stretch of river valley near Stevenson where one can see what happens when a river is caught between a rock and a not-so-hard place. Here on the south side of the Gorge, the layers of the Columbia River Basalt Group form cliffs approximately 2,000 feet thick. Just over on the north side of the river, however, these massive flows are limited to small areas and generally cap only the highest ridges. Instead, the river cuts through the older and more erosive formations described above. The beautiful and destructive results of this anomaly are described more fully in section 2.1.3.

2.1.2 Plates, Faults, and Folds

The process of plate tectonics has been well documented as the force behind dramatic events like volcanic eruptions and earthquakes, but it also results in more subtle shifts to landscapes that drive ecological

385 processes at the local level. In places like Stevenson where multiple geologic processes converge, the shifts are often less subtle, with discrete change-inducing events occurring relatively frequently.

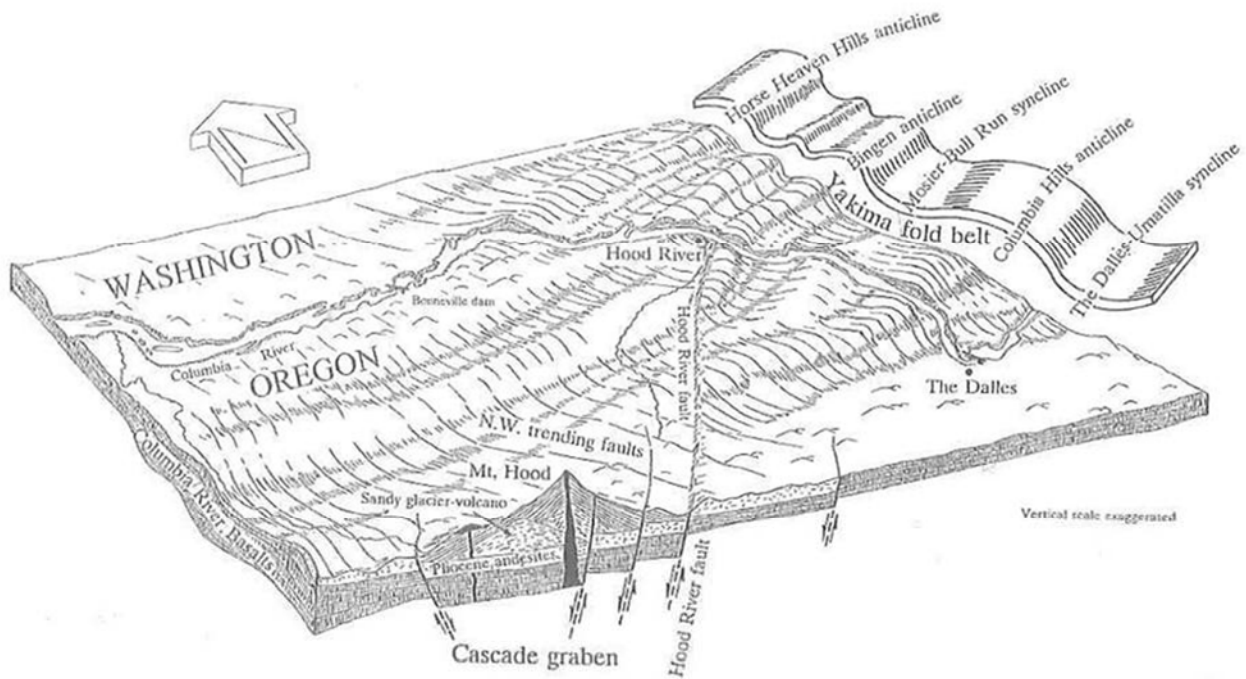


Figure 2.1-3 Yakima Fold Belt

Figure Credit Orr & Orr (2012)

390 The constant shifting, convergence, and compression of the Earth's plates upon one another in the 17 million years since the Columbia River Basalt Group flooded the ancestral Columbia River Valley have created a regional feature known as the **Yakima Fold Belt**. Northwest-southeast compression in this area has resulted in broad northeast trending folds of anticlines (convex upward folds of the geologic strata—hills) and synclines (concave downward folds of the geologic strata—holes) and northwest trending strike-slip faults (intra-plate faults separating individual sides of a rock unit that move laterally along a near-vertical crack). The south-facing slope of one of these folds underlies Stevenson, the Columbia River, and the surrounding landscape. Dipping southeasterly at an angle between 2 and 10 degrees, the orientation of this fold conspires with other ecosystem-wide processes and is another key contributor to shoreline structure and ecosystem functions, especially the persistent admission of new sediments into the water columns of Rock Creek and the Columbia River.

2.1.3 Landslides and Waterfalls

400 The combination of alternating rock units separated by thick clays, the deep percolation of surface waters through faults and fractures in the rock units, and the steep angle at which these units have been folded has been referred to by geologists as a "well-greased skidboard" (Waters, 1973, as quoted in O'Connor and Burns, 2009). Thousands of years' worth of Columbia River erosive power has ensured the freedom of movement on this skidboard as gravity exerts its force. Two sets of cataclysmic experiences demonstrate the power of these lateral and vertical forces and their effects on Stevenson's shorelines.

410 The **Missoula Floods** (also referred to as the Bretz Floods) produced some of the earliest recognizable landslides in the Stevenson area. This series of floods resulted from the repeated formation and breaching of Lake Missoula, a glacially dammed lake that covered much of western Montana. The ice dam broke approximately 80 times during a 6,000-year period between 18,000 and 12,000 years ago and sent torrents of floodwater racing across eastern Washington and down through the Gorge on their way to the Pacific Ocean.

As depicted on Figure 2.1-2, the waters of Lake Missoula spread out over the relatively homogenous flood basalt bedrock of eastern Washington to form the Channeled Scablands, but as they funneled into the Gorge, the floods' destructive cocktail of ice, rock, water, and biological debris reached depths of more than 1,000 feet and scoured the hill slopes, leaving behind cliff faces free of vegetation and soil.

415 These exposed faces are still visible today at the approximately 800-foot elevation line and contribute to the dramatic scenery of the eastern Columbia River Gorge. The waters had a far different effect near Stevenson as they were pushed to the margin between the Columbia River Flood Basalts and the softer Eagle Creek Formation. These floods exposed the thicker basalt layers on the Gorge's south side, leaving near vertical walls supported by the intact bedrock farther down-gradient of the underlying fold terrain. It is over these
420 walls of rock that many of the Gorge's spectacular waterfalls tumble. On the north side of the Gorge, however, the water's power stripped away the basalt and underlying sedimentary rock, leaving nothing down-gradient on the fold terrain to stabilize the rock units above. It is for this reason that the northern side of the Gorge is home to fewer waterfalls and more landslides.⁹

425 The **Cascade Landslide Complex** is one such set of landslides. Beginning approximately 1,000 years ago, the southern slopes of Table Mountain and Greenleaf Peak began mass wasting into the Columbia River through a series of landslides covering nearly 15 square miles, temporarily damming, and subsequently diverting, the Columbia River channel 1.5 miles south of its pre-slide location. The Bonneville Landslide is the most recent and, as the progenitor of several Bridge of the Gods legends, the most well-known landslide of this complex. A landscape-based allegory about love, loss, and familial relations, one Native American legend tells of two
430 brothers, Wy'East (Mount Hood) and Pahto (Mount Adams), battling over the love of Loowit (Mount St. Helens). When Old Coyote grew tired of his sons using the land bridge across the Columbia to fight with each other, he settled their quarrels by collapsing the bridge and forever separating the land on each side of the river.

435 Empirical evidence confirms that this area would have been dammed by the slide, and even if the allegorical bridge did not represent the type of free-spanning bridge of the European Americans' imaginations, it still provided some type of ford or dike over which people could "cross the river without getting their feet wet" (Lawrence and Lawrence, 1958, as quoted in O'Connor and Burns, 2009). Today's evidence also indicates that the impounded waters behind this dam rose more than 60 feet and stretched more than 70 miles upstream and, when they overtopped and breached the land bridge, they left observable marks of floodwaters nearly
440 100 feet deep at Troutdale, Oregon.

Though the exact date of the Bonneville Landslide is being debated, radio carbon dating indicates it occurred only 600 years ago. This timeline is generally borne out by modern historical Native American accounts,

⁹ *Recommendation #2-XX for SMP Update:* Evaluate geologically hazardous areas along shorelines for inclusion within Shoreline Jurisdiction and consider voluntary protective measure and/or special standards for site development in such areas.

which instead of relying on “myth time” or “the time before memory” describe a time when their own known and remembered ancestors traveled by canoe between the Pacific Ocean and Celilo Falls without obstruction.

445 Although the dam created by the Cascades Landslide Complex has long since been breached, its effects remain visible and are important determinants of the human inhabitation of this area. Early European-American comments focused on this area as a natural feature. In 1805, during Lewis and Clark’s westward journey, they observed the peculiar submerged stumps of upstream trees followed by the harrowing Cascade Rapids, or, as Captain William Clark called them, the “Great Shoote” (Figure 2.1-4). The dangers of the Cascade Rapids were also feared by settlers moving along the Oregon Trail—as they rafted downriver, many
450 lost their belongings or their lives to the jagged rocks clogging the Columbia’s narrowly channeled waters.

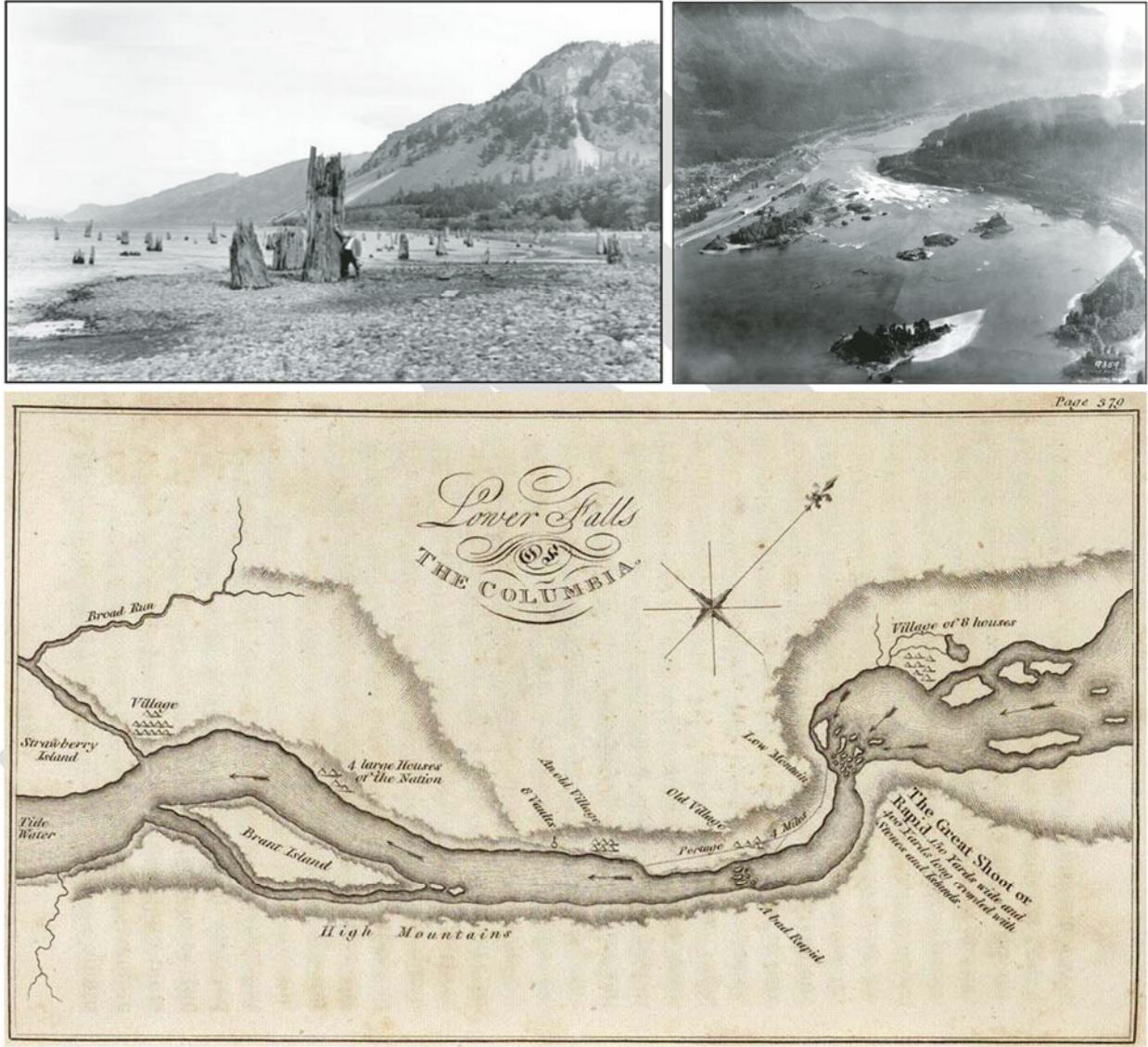


Figure 2.1-4 Early Observations of the Bonneville Landslide

Upper Left: Submerged tree stumps near Wind Mountain. Upper Right: Cascade Rapids and Cascade Locks.

Lower Map: 1815 Map of the Lower Falls of the Columbia, based on Captain William Clark’s 1805 sketch.

Figure Credits: D.H. Lawrence & Oregon Historical Society (1933), US Army Corps of Engineers (1928), taken from O’Connor & Burns (2009), and Cartography Associates, David Rumsey Collection (1998)

Not to be outdone by the environmental obstacles, accounts of the human presence at this funneling of the Columbia soon began to reveal the strategic importance of the area for travel and trade. Native Americans
455 recognized this long before Lewis and Clark's paddles plied these waters and were there to witness, aid, and exploit these and later explorers as they attempted to avoid this dangerous stretch of water by using the already well-worn portage trail.

The earliest accounts of European Americans focused on the perceived "otherness" of these peoples' dress, physical features, and social hierarchies, but soon the otherness of their trading and tolling customs
460 increased in importance. Commonly accepted customs and cultural expectations of the Native Americans were unknown to the European Americans, whose trading practices and land settlement patterns were foreign to the Native American populations. Disagreements soon led to violence. The number of incidents initiated by one group or another waxed and waned. The Hudson's Bay Company opened Fort Vancouver in 1825, but by the 1850s, the military and organizational force of the U.S. Army was deployed to the Cascades
465 where three forts (including Fort Vancouver) were set up along the Columbia's north shore, and the control of this strategic stretch of river was ceded to the hands of European Americans.

The strategic value of Stevenson's location at the head of the Cascade Rapids materialized in the decades after European Americans solidified control of the Columbia River and as steam-powered sternwheelers replaced rafts as the primary mode of transportation. In the 1890s, brothers George and Momen Stevenson
470 of the Stevenson Land Company saw opportunity in a landing dock owned by Henry Shepard and his family on a river terrace pinched between the outlets of two wood-filled watersheds. Here, they purchased land and laid out the "Plat of Stevenson," an irregularly shaped, eight-block grid focused on its Columbia River wharf. The site became a strategic stopping point for refueling and relaxation as boats and passengers prepared for or recuperated from the passage through the Cascade Rapids. To serve the needs of the boats, cordwood
475 from the surrounding hillslopes crowded the pier, ready to stoke the boilers of sternwheelers like the famous *Bailey Gatzert* on the route between Portland and The Dalles. Likewise, hotels and saloons crowded Stevenson's "Whisky Row," ready to quell the needs of weary and thirsty travelers.¹⁰

2.2 Climate

Stevenson's peculiar geologic setting magnifies the effects of ecosystem-wide processes related to climate
480 and the atmosphere. Marine air masses from the Pacific Ocean largely determine the climate regime on the western side of the Cascade Range, while continental air masses from northern latitudes in British Columbia hold sway over the climate on the eastern side of the range. Stevenson is sited squarely in the transition zone between these two climate regions, and its average temperatures show a predictable gradient between the two. Local precipitation and wind patterns in Stevenson, however, demonstrate entirely different gradients
485 that are unlike any other areas in the state.

2.2.1 Temperature

To the west of the Cascade crest, air masses move in from the Pacific Ocean and maintain fairly moderate air temperatures throughout the year, with average monthly temperatures ranging from 37° to 67° F. This variability is seasonal and primarily because of the sun's effect on the region's high latitude. The high

¹⁰ *Recommendation #2-XX for SMP Update:* Consider how the Stevenson shoreline areas can accommodate modern-day uses equivalent to the nineteenth-century amenities that led to the town's early success as a refueling and relaxation hub while still following the priority order of shoreline use preference established by WAC 173-26-201(2d).

490 altitudes of the Cascade Range mitigate the influence of this warm air, and to the east, the air masses from
the Canadian interior have greater influence. Average monthly temperatures there range from 33° to 76° F.
While the lower lows are a direct result of air stream patterns, the higher highs arise from the thermal gains
imparted on the land by the high summer sun. Stevenson’s average monthly temperatures tuck neatly
495 between the averages on either side of the Cascade Range, with December being the coldest month with a
temperature of 34.5° F and August being the warmest month at 69° F.

Figure 2.2-1 Temperatures & Precipitation Rates for Stevenson & Two Neighboring Climate Regimes (30-Year Average)

	St. Helens, OR	Battle Ground, WA	Stevenson, WA*	Prosser, WA	Kennewick, WA
Highest Temperature Month	67.2° F (Aug)	65.0° F (Aug)	68.9° F (Aug)	74.2° F (July)	76.0° F (July)
Lowest Temperature Month	37.1° F (Dec)	38.5° F (Dec)	34.5° F (Dec)	32.9° F (Dec)	34.3° F (Dec)
Annual Precipitation	46.64 in.	52.60 in.	77.52 in.	8.94 in.	7.73 in.
Highest Precipitation Month	7.22 in. (Dec)	8.14 in. (Nov)	12.64 in. (Nov)	1.36 in. (Dec)	1.13 in. (Dec)
Lowest Precipitation Month	0.72 in. (July)	0.87 in. (July)	0.92 in. (July)	0.20 in. (July)	0.18 in. (Aug)

Data Credit: NOAA (2010)

*Stevenson Data is taken from Bonneville Dam, located ~5 miles to the west

2.2.2 Wind

500 Associated with the different temperature regimes, the Cascade Range also separates different atmospheric
pressure regimes. Wind is created as high pressure air moves toward lower pressure air. Often, the pressure
differential is a result of surface air temperatures: as surface air heats up, it rises, leaving behind a vacuum
into which cooler surface air is pulled. Lower elevations in such systems experience this effect to a greater
505 degree than higher elevations, and as the only near sea-level pass through the Cascades, the Columbia Gorge
provides the primary conduit through which the pressure regimes interact—and through which winds are
funneled.

510 Because of the seasonal differences in temperatures on each side of the Cascades, there are also seasonal
differences in the direction of prevailing winds. In the summer months, the hot continental air to the east of
the Cascades rises, pulling west winds through the Gorge that increase in intensity as daytime heating
increases the pressure differential. These summertime thermals produce the dependable and strong winds
lauded as world class by sailors, windsurfers, and kiteboarders. The exhilarating rush of being pulled by 30-
515 mph winds draws daytrippers from the Portland/Vancouver area and seasonal recreationalists from across
the world.¹¹ In the winter, winds move in the opposite direction as the warmer maritime air to the west of the
Cascades draws the cold continental air from the east. Anomalies to these norms do occur, but east winds
during the summer and west winds during the winter are comparatively infrequent and short in duration.

515 A phenomenon known as “gap flow” also occurs through the Gorge, which affects wind intensity based on
the direction of flow. As air moves down the pressure gradient—from high to low/cool to warm—it
accelerates and the strongest winds are observed at the gap’s exit. This flow is well known to wind-based
recreationalists whose preferred launch spot could be anywhere along the length of the Gorge depending on
the wind direction. On west-wind days, thrill seekers will travel east towards Hood River and The Dalles to

¹¹ *Recommendation #2-XX for SMP Update:* Develop tools to accommodate the unique uses related to wind-based recreation and position Stevenson to corner the emerging markets associated with these forms of water-dependent shoreline recreation.

520 capture the intense wind near the gap's exit. East winds will draw them to Stevenson and other launches on the west end of the Gorge.



Figure 2.2-2 Wind Recreation on the Columbia River
Left Photo: Windsurfers rig their sails at Bob's Beach.
Right Photo: Kiteboarders carve into the wind, sharing tight spaces on the water.

Photo Credits: Left, Dawn Nielson (2008) Right, Carol Bohstad (2009)

2.2.3 Precipitation

525 Seasonal variations in temperature also interact with the air's moisture content to produce differing patterns of precipitation on each side of the Cascades. To the west, the consistently moist maritime air is most noticeable in the wintertime when temperatures are far below the point when water vapor saturates the air to coalesce as precipitation. The result involves persistent stretches of clouds and more than 65 percent of the approximately 50 inches of annual precipitation falling between November and March. The opposite is

largely true during the warm summer months, when higher temperatures rarely fall below the point when the water vapor in the air coalesces, and rain is infrequent.

The higher altitudes of the Cascade Range also affect the air's moisture content, causing most of it to fall out before it reaches the Columbia Basin to the east. The limited precipitation that does fall on the eastside amounts to only approximately 8 inches, and, with only 60 percent of the annual rain falling between November and March, it is spread more evenly over the year than on the west side.

Due in part to Stevenson's location along the Cascade crest and in part to the air mass interactions facilitated by the Columbia River Gorge, Stevenson's annual precipitation, measured at the Bonneville Dam, is greater than the precipitation falling on the surrounding regions. At the Bonneville Dam, 5 miles downstream of Stevenson, the 30-year average annual precipitation is approximately 78 inches, 70 percent of which falls in the five months between November and March.¹²



Figure 2.2-3 Freezing Rain: Beautiful, Dangerous

Photo Credit: Dawn Nielson (2005).

¹² Recommendation #2-XX for SMP Update: Consider how this amount and timing of precipitation impacts the City's stormwater system as it outlets to shoreline areas and whether this impact can be lessened.

545 Wintertime interactions between the neighboring climatic regimes are of special note for the Stevenson area because of the potential dangers involved. High-level atmospheric snows falling through a layer of moist, warm Pacific air often melt into rain before falling through the cold air mass from the Columbia Basin. If the Columbia Basin air mass is thick, this mixture will refreeze as sleet before it reaches ground level, but often it will fall as super-cooled water and refreeze when it reaches a cold surface or solid object. The glaze of ice that results from these "silver thaws" threatens to down habitat-friendly trees, results in shoreline
550 modifications to replace overhead utility lines, and makes pedestrian and vehicular travel dangerous.¹³

2.3 Hydrology

555 As the regional climatic patterns deposit rain and snow from above, Stevenson's geologic setting transmits them downstream to form the structures of Stevenson's shorelines. Ashes Lake, Rock Cove, Rock Creek, and the Columbia River are formed through the various groundwater and surface water hydrological processes described here.

2.3.1 Groundwater

560 Specific studies on aquifers and groundwater movement have not been conducted in the Stevenson area, but previous studies made several general observations based on the geology of the basin.¹⁴ These studies describe three general types of groundwater, including perched water tables (small aquifers trapped by clay-rich layers between rock units), artesian wells (including warm or hot springs), and the Bonneville Landslide aquifer.

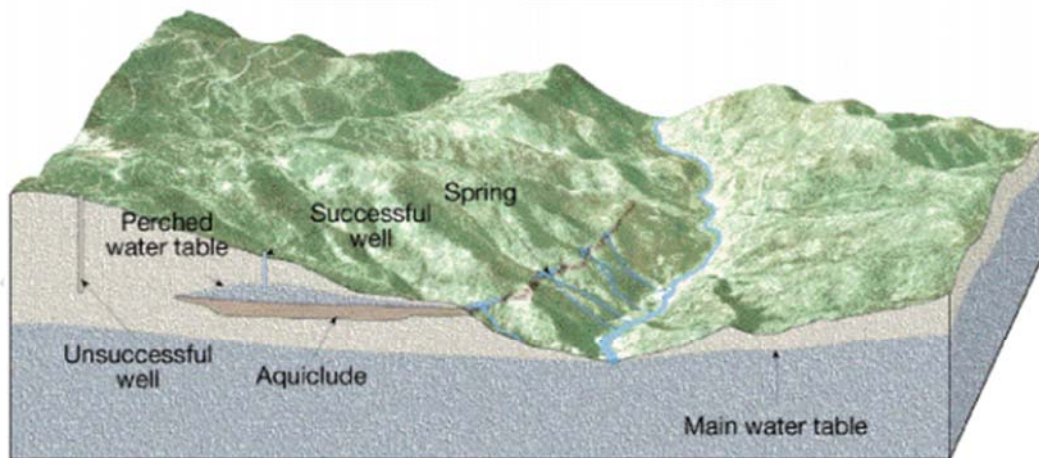


Figure 2.3-1 Perched Water Tables, Springs, and Unsuccessful Wells

If deep wells in the Stevenson area are likely hydrologically connected to the Columbia River. Springs and shallow wells are likely connected to perched water tables in the Rock Creek basin.

Figure Credits: Tarbuck, et al. (2005)

¹³ Recommendation #2-XX for SMP Update: Consider methods to increase resiliency during winter storm events, including burying overhead utility lines in shoreline areas and the voluntary or assisted replacement of downed vegetation.

¹⁴ Recommendation #2-XX for SMP Update: Consider future studies of aquifers and groundwater in the Rock Creek basin similar to those conducted by the U.S. Geological Survey for the basins in Hood River and Wasco counties.

565 The Bonneville Landslide aquifer is one of the more important groundwater features because of its
relationship to Stevenson’s municipal water supply and influence on Rock Creek. The high permeability of
ground above this aquifer allows the ready percolation of precipitation through the landslide’s jumbled
deposits. Through the not-always-intuitive connectedness of ground and surface waters, these waters travel
along the margin of the landslide and its underlying rock units to emerge as springs and supply the base flow
for a Rock Creek tributary. Surface waters are drawn from this tributary—and also from Rock Creek during
certain flows—for treatment and delivery to the taps of the homes and businesses connected to the City’s
570 municipal system. Those not served by this system draw their water from wells drilled into or springs
originating from perched water tables—with varying degrees of reliability. To overcome unreliable sources,
surface and ground water withdrawals are expected to continue along Stevenson’s shoreline areas, especially
within the Rock Creek watershed.¹⁵

575 Groundwaters in the Stevenson area also engage in a complex interrelationship with the local climate and
geology. By building up a thick deposit of ice glaze on all exposed surfaces, wintertime icing affects the
infiltration of water into the ground. By freezing the outlet of springs, winter temperatures reduce the
discharge of groundwater into streams and cause temporary rises in the groundwater table and increased
hydrostatic pressure within the soils. The reduced stability of slopes during states of high hydrostatic pressure
increases the likelihood of landslides.¹⁶ Ground movement creates new or expanded fractures affecting the
580 location, recharge, and/or presence of perched water tables and springs.

2.3.2 Ashes Lake

585 Ashes Lake is an approximately 57-acre backwater of the Columbia River created behind a railroad berm
when the Bonneville Pool inundated a lowland. While the waters of the lake lie outside the Stevenson urban
area, a portion of its shorelands are included within the area the City may annex in the future. It is included
here to allow the City to predesignate shoreline environments within the Stevenson urban area.

2.3.3 Rock Cove

590 Previously known as Stevenson Lake and the Hegewald Mill Pond, Rock Cove is an approximately 75-acre
backwater of the Columbia River which, like Ashes Lake, was created behind a railroad berm when the
Bonneville Pool inundated a lowland (approximately 75 feet above sea level). Prior to completion of the
Bonneville Dam, the area that is now Rock Cove was pasture and agricultural bottomland composed of the
deltaic deposits from Foster and Rock creeks (See Section 4.6.). Today, this same area is fed by Foster Creek
on its western side, but the small stream does little to affect hydrology or water levels in the cove. Instead,
water levels can fluctuate daily by several feet based on decisions made by the USACE and BPA at the
Bonneville Dam.¹⁷ Deep-water areas of the cove are typically between 10 and 15 feet below the water’s
595 surface.

¹⁵ *Recommendation #2-XX for SMP Update:* Consider private and municipal water supply needs when developing allowed uses in shoreline areas.

¹⁶ *Recommendation #2-XX for SMP Update:* Consider developing voluntary restoration activities and regulatory standards that decrease or avoid increased hydrostatic pressures within shoreline soils, potentially including the impacts of stormwater control facilities, on-site septic systems, and other land uses and developments.

¹⁷ *Recommendation #2-XX for SMP Update:* Acknowledge the City’s lack of control over water levels and flow regimes in the SMP’s goals and regulations for Rock Cove shorelines.

2.3.4 Rock Creek

600 The Rock Creek watershed is more than 43 square miles in area with a dendritic drainage pattern. The stream runs generally from the northwest to the southeast over its 15-mile course. Elevations in the watershed range from nearly 4,000 feet above sea level at the headwaters of the creek on Lookout Mountain to near 80 feet at its outlet into the Columbia River in Stevenson. Approximately 90 percent of the watershed lies in the rain-dominated and rain-on-snow precipitation zones described by the Washington Department of Natural Resources (DNR). Less than 1.5 miles of this course lies within the Stevenson urban area, and all of the watershed within the urban area is in the rain-dominated category.

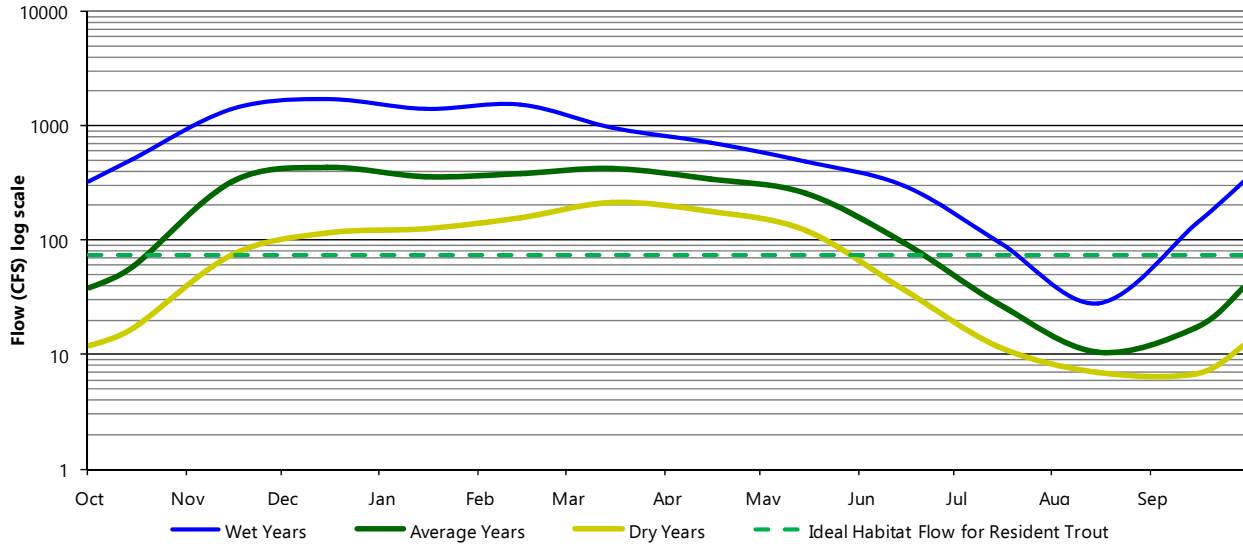


Figure 2.3-2 Rock Creek Hydrograph
Water years synthesized via monthly regression with Wind River daily flows.
Figure Credits: Ben Shumaker (2015) after Jim Pacheco (2014)

605 Figure 2.3-2 shows the extreme variation in flows expected in this stream, which can range from approximately 1,700 cfs in the wettest months of the wettest years (blue line) to only 7 cfs in the driest months of the driest years (yellow line). Even in average years (solid green line), Rock Creek’s flow can vary between 430 cfs and 10 cfs depending on the time of year.

610 The lack of snow-dominated areas in the watershed is also apparent in this hydrograph, which does not display the delayed increase in flows typically expected of such watersheds in the early summer when snowmelt supplements precipitation. This situation will insulate Rock Creek from many predictable effects associated with the current warming trends, though the hydrograph may show decreased runoff in May and June if less snow occurs in the higher portions of the watershed. Even if such decreases become notable in the future, the City does not anticipate the mean annual flow dropping below the 20 cfs threshold for consideration as a shoreline of the state.¹⁸

¹⁸ Recommendation #2-XX for SMP Update: Evaluate ongoing monitoring efforts and activities to ensure Rock Creek remains a shoreline of the state.

2.3.5 Columbia River

620 The Columbia River watershed is a behemoth by comparison. Draining an area nearly the size of Texas (approximately 260,000 square miles), the stream travels more than 1,200 miles between its headwaters in the Rocky Mountains of British Columbia and its mouth at the Pacific Ocean. The fourth-largest river by volume in North America, flows at the river’s mouth range between approximately 100,000 cfs in the low flow months of September and October (when rainfall and snowmelt runoff are low) to approximately 500,000 cfs during the high flow months between April and June (when snowmelt runoff is at its greatest), averaging approximately 260,000 cfs over the course of a full year. Prior to regulation of flows by dams, flows at the mouth experienced greater extremes, with low flows of 79,000 cfs, high flows of over 1,000,000 cfs, and average flows of approximately 273,000 cfs. Figure 2.3-3 puts these giant numbers into perspective, showing how dams and urbanization have moderated high and low flows over the course of the year.

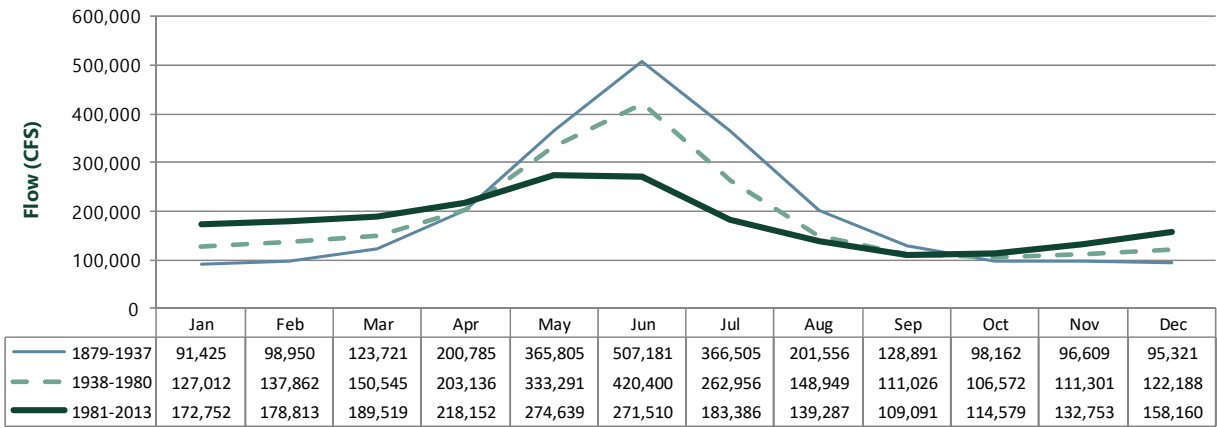


Figure 2.3-3 Columbia River Hydrograph through Time

Three representative hydrographs as measured below The Dalles Dam. Time periods reflect hydrograph before completion of the Bonneville Dam, between completion and expansion of the Bonneville Dam, and since expansion.

Figure Credits: Ben Shumaker (2015) with data from USGS National Water Information System.

630 More locally, the Columbia Gorge subbasin (the watersheds between the Bonneville and The Dalles dams) is a drainage area of 3,300 square miles and contributes approximately 3.9 percent of the river’s powerful discharge through Bonneville Dam. Elevations within this subbasin range from more than 150 feet below mean sea level (the deepest riverbed elevation in the Bonneville Reservoir) to over 4,000 feet in the mountainous headwaters bordering the river. The Stevenson urban area contains approximately 3.5 miles of Columbia River shoreline. Water depths adjacent to this area follow a shallow gradient over the dam-inundated historic floodplain before a rapid drop-off into the approximately 80-foot-deep navigation channel.

2.4 Bonneville Dam

Roll on, Columbia, roll on. Your power is turning our darkness to dawn... At Bonneville now there are ships in the locks, the waters have risen and cleared all the rocks, shiploads of plenty will steam past the docks, roll on, Columbia, roll on.

--Woody Guthrie, 1941

640 Penned while the famous folksinger was employed by the Bonneville Power Administration, Washington’s official folk song speaks for the chorus of boosters who engineered opportunity from a narrow bottleneck of the Columbia River. With a few lines of lyrics, Woody Guthrie’s “Roll On Columbia” captures the mid-

645 twentieth century's belief in its ability to create improvements that benefit many and harm no one through
massive alterations of the environment. The river's power could be harnessed and transported to provide
electricity to industries and homes, unproductive lands could be watered to grow crops, barriers to
navigation could be cleared to allow goods to flow to and from new ports of call, a new empire could arise,
and the river that created it would just roll on as if nothing had changed. History, however, has sung a
different song. In this new song, the benefits of the Bonneville Dam are in disharmony with its drawbacks,
650 and the dam has become an ecosystem-wide process unto itself. This section discusses the physical and legal
influences of this massive structure on Stevenson's shoreline areas.

2.4.1 Physical Influences: Not a River/Not a Lake

655 Built at the same location as the Cascades Landslide Complex, the Bonneville Dam's influence on the
Columbia River has mimicked the influence of the legendary Bridge of the Gods. Its relative permanence in
comparison to that earlier river blockage sets this structure apart and requires constant human
management to ensure the river's force passes through the dam's turbines without overtopping or breaching its
concrete walls. The ecosystem-wide processes
660 associated with this management result in water levels and flows having characteristics of a lake, a reservoir, an
inland river, and a tidally influenced river.

The Bonneville Dam is the last of 18 on the mainstem of the Columbia and Snake rivers, and the decisions about
665 water levels and flow rates behind each dam are made well in advance of a wide variety of anticipated events
within the Columbia River's highly interconnected and rationalized system. Anticipation of a large rain-on-snow
event in the Idaho Rockies will trigger a drawdown of the Grand Coulee Dam, whose waters are then
distributed behind the dams lower in the system;
670 forecasts of extended heavy rains in the Willamette Valley will trigger the storage of waters behind upstream
dams to eliminate any flood threat to the Portland-Vancouver area; predictions of unusually dry summers
will result in longer-term storage of irrigation waters behind the dams of the Columbia Basin; scheduled
675 maintenance of The Dalles Dam will result in the drawdown of both The Dalles and the Bonneville pools
for worker safety.
680

The list of interconnections goes on, but human decisions have rationalized the Columbia's ecosystem
processes to ensure that management decisions balance regional needs of power generation, navigation,
flood control, irrigation, and fisheries management. Managing the system at a regional level, however, can
often appear irrational in relation to processes experienced at the local level. Water levels in the Bonneville
685 Pool may hold steady for weeks at a time; then, within the course of a few days, may rise or fall by up to 12.5

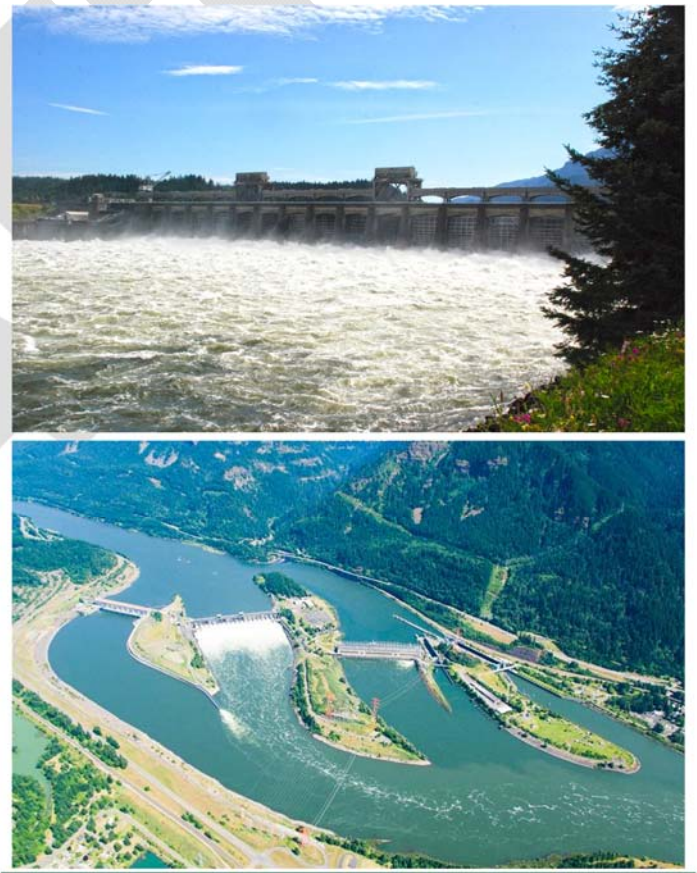


Figure 2.4-1 The Bonneville Dam
Turbulent waters emerge from the river-altering Bonneville Dam.

Figure Credits David Hamilton (2014), Washington State Department of Ecology (2007)

feet. Balancing other needs, operational decisions made at the dam do not consider the impact of fluctuating water levels to the erosion or protection of riparian shorelines.¹⁹ Decisions establishing the normal pool elevation have been made without consideration for its impact on tributary streams, whose pre-dam sediment fallout curves have been drastically altered.²⁰ Changes to the rate of the river's flow alter water currents at local shoreline eddies.

2.4.2 Legal Influences: Flowage Easements

To facilitate the maintenance of artificial water levels, the federal government initiated a phase of land acquisition associated with the original construction of the Bonneville Dam and navigation lock in 1938 and the addition of a second powerhouse in 1981. Beginning in 1936 and concluding in 1980, this land acquisition was accomplished largely through the voluntary purchase of "flowage easements," though the federal government had, and used, the authority to force the matter through court-sanctioned "declarations of taking." The specific provisions of these easements changed over the course of time and varied slightly according to the demands of the individual property owners selling the easements. Early granters of the easement only sold:

... the full and perpetual right, power, privilege and easement to overflow...all that portion of [the owner's] land lying below [a specific elevation's] contour line...together with the right to go upon the land...from time to time to remove therefrom the timber and other natural growth, and any accumulations of brush, trash or driftwood...

More typically, however, these easements granted to the United States of America contained a longer list of encumbrances on the underlying properties. The key provisions regarding the control of water levels and the maintenance of vegetative growth and/or accumulation were included when these owners granted:

The perpetual right, power, privilege and easement permanently to overflow, flood and submerge the land...and the continuing right to clear and remove any brush, debris and natural obstructions which...may be detrimental to the [Bonneville Lock and Dam] project, together with all right, title and interest in and to the timber, structures and improvements situate on the land...

But these later granters also sold their rights to construct buildings or conduct land-filling activities within these easements,^{21 22} providing:

... that no structures for human habitation shall be constructed or maintained on the land, that no other structures shall be constructed or maintained on the land except as may be approved in writing by the representative of the United States in charge of the project, and that no

¹⁹ Recommendation #2-XX for SMP Update: Consider shoreline use and modification policies that incorporate solutions for shoreline protective works similar to those being developed for coastal areas expecting sea level rises.

²⁰ Recommendation #2-XX for SMP Update: Consider costs and benefits of ongoing sediment management efforts, such as dredging, when developing Environment designations and shoreline use and modification policies.

²¹ Recommendation #2-XX for SMP Update: Consider how these easements interact with the vegetation conservation and removal standards of the SMP and how what level education and outreach is necessary for the Corps and the property owners.

²² Recommendation #2-XX for SMP Update: Consider the reduced likelihood of development within areas covered by flowage easements when crafting allowed uses and development standards in shoreline environments.

*excavation shall be conducted and no landfill placed on the land without such approval as to the location and method of excavation and/or placement of landfill...*²³

720 Beyond the monetary compensation the owners received for these easements—which could range into the thousands of dollars—the easement declarations concluded with the palliative statement that the landowners, their heirs, and assigns reserved:

725 *... all such rights and privileges as may be used and enjoyed without interfering with the use of the [Bonneville Lock and Dam] project...or abridging the rights and easement...acquired; provided further that any use of the land shall be subject to Federal and state laws with respect to pollution.*

730 While the rights granted to facilitate the massive Bonneville Dam project have had sweeping effects on the property owners' ability to use and develop portions of their properties, the easements have been largely effective in preventing damages from flooding. Repetitive flood losses for properties along Stevenson's shorelines are minimal, largely because of the consistent overlap of these areas.^{24, 25}

²³ *Recommendation #2-XX for SMP Update:* Evaluate administrative mechanisms related to coordination with the USACE and other governmental regulators during the review and issuance of permits under the SMP.

²⁴ *Recommendation #2-XX for SMP Update:* Consider shoreline use and modification policies that continue to minimize flood losses for shoreline property owners.

²⁵ *Recommendation #2-XX for SMP Update:* Consider incorporating a floodplain management plan into the restoration plan to better reflect the actual risk to floodplain property, thereby reducing owners' insurance costs.

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740



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3.0 Shoreline Ecological Functions

745 Ecological functions are the services performed when physical, chemical, and biological ecosystem-wide processes interact. Ecological functions occur at discrete locations along shoreline areas. Because the SMA and the SMP guidelines attribute value to the services performed through ecological functions, local jurisdictions are required to evaluate the baseline level of service these functions provide to their shoreline areas. These functions are typically grouped into categories related to water quality, water quantity, and habitat.

750 This section of the shoreline inventory and characterization report describes water quality, water quantity, and habitat functions occurring along Stevenson’s shorelines. The characterizations below provide a necessary link between the ecosystem-wide processes of Section 2.0 and the indicators that will be used to more fully characterize specific shoreline reaches in Section 4.0.

3.1 Water Quality Functions

755 The water making its way past Stevenson’s shorelines includes a complex mixture of sediments, nutrients and toxics, and temperatures that interact with local shoreline morphology. During these interactions, the water’s overall quality is either improved or diminished when the ecological functions of sediment transport, nutrients and toxics filtration, and temperature regulation are performed. For most water quality functions, the City can rely on characterizations performed by Ecology and the EPA through the CWA 303(d) list and its
760 5-point scale for water quality concerns, including water temperature and pollutants. Under this scale, Categories 4 and 5 indicate serious impairments that require some degree of action.

3.1.1 Sediment Transport

765 Sediment transport is an important ecological function because of its ability to influence shoreline morphology and because of its interaction with ecological functions related to habitat. Commonly described in terms of “sources and sinks,” sediment transport occurs differently over the course of a waterway. In a large stream system like the Columbia, common sources of sediments are soil erosion from overland flow, streambank erosion, wind deposition, and tree fall. In a forested mountainous stream system like Rock Creek, these sediment sources are dwarfed by in-channel erosion and the landslides and mass wasting events discussed above. In an urbanized watershed like Rock Cove, runoff from buildings and transportation
770 corridors plays a bigger role in the supply of sediment.

PROCESS FUNCTION INDICATORS	Geologic Processes, Climate Processes, Hydrologic Processes, Bonneville Dam Processes —Sediment Transport— Riparian Vegetation, Shoreline Stabilization, Impervious Surface Area, Urban Runoff, Permanently Protected Areas, 303(d) List, Floodplain Area, Wetland Acreage
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775 Regardless of the source, a waterbody uses any of several methods to transport the sediments downstream. Larger sediments roll, slide, or skip along the stream bed pushed by higher flows. Smaller sediments are either dissolved or suspended in the water itself. All sediments will continue migrating downstream until flow velocities (largely a function of flow rates, channel widths, and channel gradients) decrease to the point where sediments settle out and deposit or sink to form new and ever-changing shoreline morphological features.

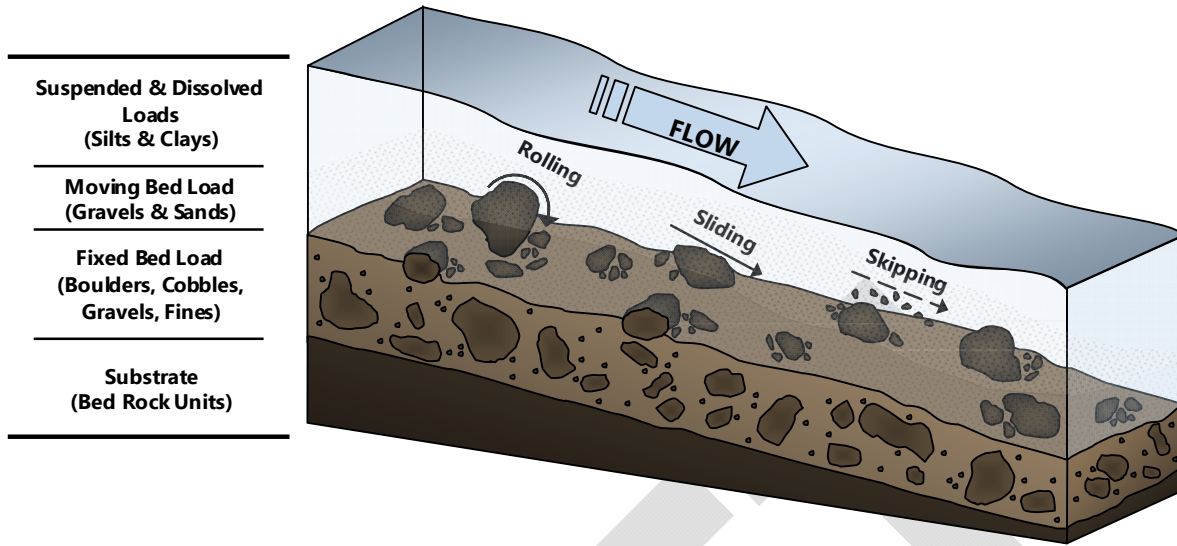


Figure 3.1-1 Sediment Transport Processes

Figure Credit: Ben Shumaker

780 The factors controlling sediment inputs and flow velocity are variable along a stream’s course and over the course of time, seasonally and long-term. Though no stream system has a continually balanced management of sediment sources and sinks, unimpaired shorelines generally manage the input and throughput of sediments on an annual basis. Impaired sediment transport occurs when sources of sediment are cutoff from a stream or when sources of sediment overwhelm a stream’s ability to move it through the system. Stevenson’s shorelines areas—especially Lower Rock Creek and Rock Cove—mostly serve as sediment sinks and areas of the Columbia River, Rock Cove and Rock Creek are particularly impaired through rapid accretion.

3.1.2 Nutrient and Toxic Filtration

790 Nutrient and toxic filtration is an ecological function closely related to sediment transport, habitat functions and can also affect public health. Specific nutrients and toxins include heavy metals (lead, zinc, mercury), nitrogen, pathogens (disease causing bacteria, virus, or microorganisms), pesticides and herbicides, and phosphorous. Nutrients & toxics are contributed to waterways by naturally occurring metals in the soil and biotic sources, “point sources” (factories and wastewater treatment plants), and “nonpoint sources” (acid rain, agriculture, contaminated groundwater, and urban runoff). Filtration of nutrients and toxins is performed through biotic uptake, adsorption to other elements or particles, chemical interactions and changes, and—in the case of pathogens like bacteria and protozoa—death of the organism.

PROCESS	Hydrologic Processes, Bonneville Dam Processes
FUNCTION	—Nutrient & Toxic Filtration—
INDICATORS	Riparian Vegetation, Shoreline Stabilization, Impervious Surface Area, Urban Runoff, Permanently Protected Areas, 303(d) List, Floodplain Area, Wetland Acreage

795 Impaired nutrient and toxic filtration occurs when sources of nutrients and toxins overwhelm the capacity of a shoreline system, when shoreline waterbodies are cutoff from floodplains or associated wetlands, and when sedimentation of adsorbed nutrients and toxics pollutes a river bottom. These functions along Stevenson’s shoreline areas are at risk of impairment but largely operating within the expectations of the CWA water quality standards.

800

3.1.3 Temperature Regulation

805 Important to the lifecycle needs of fish and wildlife and the maintenance of other water quality functions, temperature regulation varies according to climate processes based on diurnal (daily) and annual cycles, but can also be heavily influenced by geologic processes (hot springs), shoreline morphology, and vegetative cover.

PROCESS	Geologic Processes, Climate Processes, Bonneville Dam Processes
FUNCTION	—Temperature Regulation—
INDICATORS	Riparian Vegetation, Impervious Surface Area, Urban Runoff, Permanently Protected Areas, 303(d) List, Floodplain Area

810 The temperature regulation function is often considered impaired when shade-producing vegetative cover is removed from a shoreline or when point sources, hot springs, and/or urban runoff increase ambient stream temperatures. The Columbia River, Rock Cove, and Rock Creek systems demonstrate higher than normal temperatures for shorelines of their type as indicated in section 4.

3.2 Water Quantity Functions

815 Water quantity functions deal with the supply of water provided by climate and hydrological processes. Water quantity functions are valued because they moderate the distribution of the water supply over time. Reducing peak flood levels during high flows and maintaining streamflow and water availability during low flows.

Water storage occurs in depressional wetlands, lakes, floodplains, and in subsurface aquifers along or under shoreline systems. Water storage is valued as a shoreline ecological function because of its ability to regulate flows, maintain lifecycle needs for habitat, moderate flood risks to human life, and provide water for consumptive purposes.

PROCESS	Geologic Processes, Climate Processes, Hydrologic Processes, Bonneville Dam Processes
FUNCTION	—Water Storage & Flow Regulation—
INDICATORS	Riparian Vegetation, Impervious Surface Area, Urban Runoff, Permanently Protected Areas, Floodplain Area, Wetland Acreage

820 Water storage and flow regulation functions vary greatly depending on the underlying geologic, and hydrologic processes and some areas are naturally unsuited for the storage of water. Areas with naturally permeable soils, connected floodplains and associated wetlands, and few impervious surfaces are considered well suited to water storage and flow regulation functions. Impairment occurs when these types of natural
825 conditions are not present or are diminished. The Stevenson's Rock Creek shoreline areas contains some complex stream bottom, plunge pit, and snags of large woody material (LWM), these shoreline reaches are largely ill-suited for water storage and flow regulation functions. The Bonneville Dam places a daily demand on the water storage functions of the Columbia River and Rock Cove shorelines. This process creates a well-functioning flow regulation, but partially impairs the interrelated water storage function of these shorelines as
830 a result.

3.3 Habitat Functions

835 The rocks, soils, sediments, and waters of Stevenson's shorelines host a number of terrestrial, aquatic, and amphibious plant and animal species. Some of these species attract flocks of visiting bird watchers, some are a boon for backyard naturalists, some spark the imagination of the city's children, some are a veritable nuisance to area vegetable gardens, and some are afforded special protection by the state and federal governments.

Habitats are occupied by species demonstrating varying degrees of responsiveness and/or sentience in the selection of preferred sites. Because of this selectivity, the characterization of habitat functions goes into greater detail than the characterizations above. Descriptions of sensitive species are provided and followed by the ecological functions related to the input of organics and LWM and the connectivity and structures suitable for lifecycle needs.

3.3.1 In-water Habitat and Anadromous Fish

Anadromous fish are fish that are born and reproduce in freshwater habitats and then migrate to saltwater for a portion of their lifecycle. These species include salmon, trout, and lamprey. Anadromous species are among the most important species to consider when planning for the future of Stevenson's shorelines



Figure 3.3-1 Chinook Salmon

A female Chinook spawns in clean gravels free of fine sediments.

Photo Credit City of Seattle (2013).

because of the decline in their numbers that has been observed over time.

Chinook Salmon (*Oncorhynchus tshawytscha*) is the largest of the Pacific salmon with the most diverse and complex lifecycle strategies, including distinct fall and spring migratory runs that evolved over thousands of years. Lower Columbia Chinook were listed as a threatened species under the ESA on March 24, 1999 and the designation was reaffirmed on June 28, 2005. Critical habitat for Lower Columbia Chinook was designated on September 2, 2005, and includes the Columbia River and Rock Creek.

Chum Salmon (*Oncorhynchus keta*) is the most widespread species of Pacific salmon,

with production extending along the Pacific Rim from southern California to Korea as well as many tributaries to the Arctic Ocean. Prior to the species' decline, chum salmon are believed to have been the most abundant of the salmonids in the Pacific Ocean. Lower Columbia chum were listed as a threatened species under the ESA on March 25, 1999 and the designation was reaffirmed on June 28, 2005. Critical habitat for Columbia River chum was designated on September 2, 2005, and includes the Columbia River.

Coho Salmon (*Oncorhynchus kisutch*) is a widespread species of Pacific salmon, with production in most river basins around the Pacific Rim from central California to Korea and Japan. The decline of Columbia River Coho abundance began in the mid-1800s due to the impacts of Euro-American activities in the region. Lower Columbia Coho were listed as a threatened species under the ESA on June 28, 2005, and critical habitat documentation for the Stevenson area is still being developed.

Eulachon or Smelt (*Thaleichthys pacificus*) is a small anadromous fish inhabiting rivers and streams from central California to the Bering Sea. Eulachon is a forage fish occupying an important link in the food chain between zooplankton and larger organisms. Eulachon were listed as a threatened species under the ESA on March 18, 2010 and critical habitat was designated on October 20, 2011. This critical habitat includes the Columbia River and its tributaries downstream of Bonneville Dam, but does not extend to Stevenson's shoreline areas.

Pacific Lamprey (*Lampetra tridentate*) is an anadromous species of eel-like fish with great cultural importance to the tribes of the Columbia River Basin. Information on lamprey abundance is limited and does not exist for the Columbia River or its tributaries above Bonneville Dam. However, based on declining trends measured at the dam, the decline of Pacific lamprey has become a significant regional concern. A 2003 petition for ESA listing was determined insufficient to evaluate the species' status, but it is possible that Pacific lamprey will again be petitioned for ESA listing if their numbers continue to decline.



Figure 3.3-2 Pacific Lamprey
Pacific Lamprey cling to the fish window at Bonneville Dam during return-migration.
Photo Credit: Randy Rasmussen, *The Oregonian* (2013).

Steelhead Trout (*Oncorhynchus mykiss*) has the greatest diversity of lifecycle patterns of all Pacific salmonids, including individuals and populations that do not migrate to saltwater and survive multiple spawning and ocean migration cycles. Resident (non-anadromous) varieties are called rainbow trout, and anadromous varieties are called steelhead, which are further classified by their summer and winter migratory runs. Despite their flexible lifecycles and spawning patterns, Lower Columbia steelhead populations have declined. Originally listed as a threatened species under the ESA on March 19, 1998, Lower Columbia Steelhead's threatened status was reaffirmed on June 28, 2005 and critical habitat was designated on September 2, 2005. Along Stevenson's shorelines, this critical habitat includes the Columbia River. The primary avoidable human contributions to the natural population's declining abundance include reduction of tributary and estuary habitat, dam construction and operation, fishing, fish hatcheries, and predation by other animals. Because Stevenson's shorelines do not contain estuaries or fish hatcheries, and because the City exerts no control over the operations of the Bonneville Dam or enforcement of fish harvesting laws, the City's ability to contribute effectively to the recovery of anadromous fish is limited to the preservation and restoration of habitat areas suitable for spawning, rearing, and cold water refuge. Figure 2.4-1 displays the lifecycle characteristics of anadromous species, including substrate conditions necessary for spawning and their rearing and migration timelines. For species protected under the ESA, the federal government has designated habitat ranges important to each species and the primary constituent elements (PCE) of these ranges that are important to the survival of the species. For salmonids, these

Figure 3.3-3 Lifecycle Characteristics of Anadromous Fish

	Spawning Substrates	Incubation	Freshwater Rearing Duration	Saltwater Rearing Duration	Out-Migration	Return-Migration
Fall Chinook Salmon	Clean gravel w/ good subgravel flow (irrigation)	60-150 days	3-8 months	1-5 years	April to August	July to November
Spring Chinook Salmon	Clean gravel w/ good subgravel flow (irrigation)	30-60 days	2-6 months	1-5 years	March to June (Peak) ¹	January to May
Chum Salmon	Gravel w/subgravel flow (temperature)	30-120 days	1-5 months	3-6 years	January to May	October to December
Coho Salmon	Stable, clean gravel	30-180 days	8-12 months	1-2 years	August to March	August to January
Eulachon (Smelt)	Sandy gravel	21-40 days	1-7 months	3-5 years	January to July	January to June
Pacific Lamprey	Fine gravels & silts	14-21 days	4-7 years	2-3 years	February to July	March to October
Summer Steelhead Trout	Clean gravel w/ well aerated flow	30-180 days	2-3 years	1-3 years	March to June	May to October
Winter Steelhead Trout	Clean gravel w/ well aerated flow	30-210 days	2-3 years	2-3 years	March to June	November to April

Data Credit: Ben Shumaker (2014) after Lower Columbia Fish Recovery Board (2010)

¹Some spring Chinook begin out-migration immediately upon emergence from the egg. Year-round out-migration has been observed.

915 PCEs include rearing habitat in side sloughs, side channels, wetlands and other areas along stream margins. These preferred cold- and quiet-water areas often contain woody debris and overhead cover to aid in food and nutrient (allochthonous) inputs and provide protection from predators. Lamprey require a different substrate than salmonids, residing in muddy/silty areas and filtering microscopic plants and animals from passing water. Once more developed, the sucker-like mouth is used to attach to other host fish where they feed, parasitically, on body fluids. Mature anadromous species require habitat connectivity to return to suitable spawning areas.

920

3.3.2 Additional Protected Habitats and Species

The shoreline functions important to anadromous fish are also important to other species and the maintenance of those functions will increase the habitat available for them. The species listed below are of particular concern, and other species such as the Ring-necked Snake (*Diadophis punctatus*) and Sand Roller (*Percopsis transmontana*) are monitored by WDFW and concern may grow if monitoring reveals a decline in species health.

925

Migratory Birds visit Stevenson’s shorelines at various times throughout the year, including birds of prey (hawks, osprey, owls, etc.), ducks (bufflehead, mallard, scaup, widgeon, etc.), geese (Canada, greater white-fronted, snow, etc.), seabirds (cormorants, gulls, mergansers, etc.), and smaller birds. While many of these bird species are not at significant risk of extinction, they are still protected under the Migratory Bird Treaty Act and various state and federal population management efforts. Notably, the WDFW protections for Canada geese do not apply in urban areas like Stevenson, though conflicts between these and other migratory birds are reduced through protections related to in-water habitat and anadromous fish.

930



Figure 3.3-4 Bald Eagle
A Bald Eagle perches on an abandoned pilings in the Columbia River near Stevenson

Photo Credit: John McSherry (2012).

Bald Eagle (*Haliaeetus leucocephalus*), one of America's symbols of freedom, is also a symbol of the success of the ESA. Beginning in the late 1940s, bald eagle populations began a precipitous decline based on the accelerated use of organochloride pesticides like DDT, and by the 1960s, less than 700 breeding pairs were estimated to exist in the lower 48 states. This decline led to the eagle's listing as endangered under the ESA in 1978. The protections associated with this listing and the ban of DDT have allowed bald eagle populations to double every 7 to 8 years. In 1995, the species' designation was changed from endangered to threatened, and by 2007, its recovery was deemed so successful that it was delisted throughout its range. Despite this delisting, bald eagles are still protected under the Bald and Golden Eagle Protection and the Migratory Bird Treaty acts, which prevent the killing, capturing, and commodification of eagles or their products (feathers, eggs, nests, etc.), including any nests along Stevenson's shorelines.

Bull Trout (*Salvelinus confluentus*) was fairly recently differentiated as an independent species of trout. Previously confused with the Dolly Varden, genetic studies of these fish have shown bull trout to be more closely associated with char than with the Dolly Varden it resembles. Bull trout in the Lower Columbia are a freshwater migratory species, although Puget Sound populations are known to be anadromous. Bull trout were listed as a threatened species under

965 the ESA on November 1, 1999, a designation that was reaffirmed on April 25, 2008. Current critical habitat for the Lower Columbia was designated on October 18, 2010 and includes the Columbia River mainstem.

Oregon Spotted Frog (*Rana pretiosa*) is an almost entirely aquatic frog and leaves wetlands only occasionally and for a short time. This species was recently differentiated as independent from the Columbia spotted frog, a common, thriving species. The Oregon spotted frog was designated as threatened on August 29, 2014 and critical habitat is still being developed. The current draft of the proposed critical habitat does not include any units along or near Stevenson or its shorelines.

Oregon White Oak Woodlands are priority habitats in Washington because of the abundance of mammals, birds, reptiles, amphibians, and invertebrates inhabiting their stands. The Oregon white oak (*Quercus garryana*) is Washington's only native oak, and the already limited distribution of this habitat type has been declining based on the removal of oaks for urban development and the encroachment of conifers in remaining stands. Along Stevenson's shorelines, the Washington Department of Fish & Wildlife considers

Oregon white oak woodlands a priority habitat if the stand is at least 1 acre in size and oaks make up at least 25 percent of the canopy cover. Though none have yet been officially designated, stands, or even single oaks, found to be particularly valuable to fish and wildlife (i.e., they contain many cavities, have a large diameter at breast height, are used by priority species, or have a large canopy) may also be considered priority habitats along Stevenson’s shorelines.

Management recommendations for priority Oregon white oak woodlands include reducing/eliminating the removal of oaks unless necessary for habitat enhancement purposes, thinning encroaching conifers, planting oak seedlings, and maintaining aerial pathways for sensitive species like the western gray squirrel.²⁶

Pacific Northwest Sasquatch (*Gigantanthropus crypticus*) is a humanoid species of great cultural importance to local, regional, national, and international interests. Responding to this perceived importance, Skamania County (through ordinances 1969-1 and 1984-2) has formally declared a Sasquatch Refuge which is “coextensive with the boundaries of Skamania County” and adopted felony and misdemeanor punishments for “the premeditated, willful, or wanton slaying of Sasquatch.”

Information on Sasquatch, its lifecycle, range, and abundance, is limited and cannot be quantified for Stevenson’s shoreline areas, but because of the significance of the species, the protections that have been put in place are necessary. The City concurs with Skamania County’s designation of a Sasquatch Refuge and has determined these conservation measures to be adequate for the future protection of Sasquatch populations in the vicinity.

Western Pond Turtle (*Clemmys marmorata*) is a species of highly aquatic turtle residing in streams, ponds, lakes, and wetlands. The historic range of the Western pond turtle extended from the Puget Sound to Baja California, but by the early 1990s, populations in Washington were reduced to two sites in Skamania and Klickitat counties. The species received protection in 1992 as an endangered species under the Washington ESA, but populations in other parts of its range remained healthy, and a petition for federal listing was denied in 1993. Washington’s recovery plan calls for the establishment of healthy populations at seven sites statewide, four of which are in the Columbia Gorge. Surveys conducted between 1990 and 1994 found 39 turtles at 14 different sites, but none of the sites are along or near Stevenson’s shorelines.

3.3.3 Inputs of Organics and Large Woody Material

The inputs of organics and LWM are important ecological functions contributing to the food supply and complexity of shoreline systems. Organics include insects and vegetative deposits, which are important sources of nutrients for shoreline species. Standing LWM creates nesting sites for migratory birds and overhead cover to protect anadromous species from airborne predators. Fallen LWM creates channel complexity to moderate flow rates and provide refuge from water- and land-based predators. The shoreline functions important to anadromous fish are also important to other species, and the maintenance of those functions will increase the available habitat for other protected species.

<p>PROCESS FUNCTION INDICATORS</p>	<p>Geologic Processes, Climate Processes, Hydrologic Processes, Bonneville Dam Processes —Input of Organics & LWM— Riparian Vegetation, Shoreline Stabilization, Impervious Surface Area, Permanently Protected Areas, Floodplain Area, Wetland Acreage</p>
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²⁶ Recommendation #3-XX for SMP Update: Evaluate greater prioritization of Oregon White Oak trees when considering vegetation retention/removal/replanting policies.

Impaired input of organics and LWM functions occurs when LWM cannot reach streams from adjacent riparian areas or when mass wasting events contribute LWM at a rate that exceeds the stream’s capacity to move the materials through the system. These impairments then impact the suitability of streams as habitat areas or can lead to further impairments of other shoreline ecological functions, such as reduced water storage and flow regulation. This function varies from impaired to well-functioning depending on the shoreline considered in the Stevenson area.

3.3.4 Connectivity to Habitat Structures Suitable for Lifecycle Needs

Habitats along Stevenson’s shorelines depend on the ecological functions of connectivity to preferred and/or critical habitat structures. Connectivity includes stream passage for anadromous fishes, flight corridors for migratory birds, and riparian areas for land animals and amphibians. Habitat structure suitable for lifecycle needs include the LWM and sediment transport described above, but also rely on other structural features like undercut banks, (protection from predators), cliff faces (nesting), and wetlands (rearing and refuge).

PROCESS	Geologic Processes, Climate Processes, Bonneville Dam Processes
FUNCTION	—Connectivity to Structure Suitable for Lifecycle Needs—
INDICATORS	Riparian Vegetation, Shoreline Stabilization, Piers/Docks/Floats, Road Crossings, Impervious Surface Area, Permanently Protected Areas, Priority Habitats & Species List, Floodplain Area

When impaired, connectivity between structures suitable for lifecycle needs prevents fish and wildlife from reaching suitable structures or reduces the quantity or quality of suitable structures. Specific impairments to these functions are considered in more detail in section 4 and include culvert passage²⁷, Rock Creek’s waterfalls, and inundated floodplains within the Columbia River and Rock Cove systems.

²⁷ Recommendation #3-XX for SMP Update: Evaluate methods to remove/rehabilitate/replace existing culverts within shoreline areas that decrease habitat connectivity.

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4.0 Reach Level Characterization

This chapter builds on the information in chapters 2 and 3 and describes conditions adjacent to individual shoreline reaches. According to the state shoreline guidelines (WAC 173-26-201(3)(c)), local governments are required to inventory and report available information at the shoreline reach scale as follows:

- 5 • Shoreline and adjacent land use patterns and transportation and utility facilities, including the extent of existing structures, impervious surfaces, vegetation, and shoreline modifications within shoreline jurisdiction;
- Critical areas, including wetlands, aquifer recharge areas, fish and wildlife habitat conservation areas, geologically hazardous areas, and frequently flooded areas;
- 10 • Degraded areas and sites with potential for ecological restoration;
- Areas of special interest, such as priority habitats, developing or redeveloping harbors and waterfronts, previously identified toxic or hazardous material clean-up sites, dredged material disposal sites, or eroding shorelines;
- Conditions and regulations in shoreland and adjacent areas that affect shorelines, such as surface
- 15 water management and land use regulations;
- Existing and potential shoreline public access sites, including public rights-of-way and utility corridors;
- General location of channel migration zones (CMZs) and floodplains; and
- Known cultural, historical, and archaeological resources

20 In addition, this report includes data and characterization of other aspects related to shoreline condition:

- Description of physical features, landmarks, and land use trends based on existing and future land use, zoning and ownership;
- Description of known archeological, cultural, and historic resources;
- Summary table of the ecological indicators;
- 25 • Description of public access features; and
- Summary of the degraded conditions and restoration opportunities.

The combination of the ecological indicator ratings and these additional assessments help describe both the natural and built character of each reach, thereby setting the baseline condition from which Ecology's 'no net loss' standard is considered.

30 ***4.0.1 Methodology***

Building on the assessment of broad, landscape-scale processes and shoreline functions in previous sections (see also Table 1.2-1, this section describes current shoreline conditions based on their performance on 12 indicators of ecological functions for 7 reaches along Ashes Lake, Columbia River, Rock Cove, and Rock Creek. The Physical Environment of each reach is characterized based on Available Floodplain Areas

35 (including Channel Migration Zones), Riparian Vegetation, Shoreline Stability, and Wetland Acreage. Fish-Blocking Culverts, Priority Habitat & Species (PHS) Listings, and Permanently Protected Areas are used to characterize the Biological Resources of each shoreline reach. Altered Conditions within each reach are characterized based on Ecology's determination of water quality through their 303(d) Listings, Impervious

40 Surface Area, Overwater Roads & Structures, Setbacks to OHWM, and Urban Runoff. Performance is rated qualitatively by a 5-point scale as shown in Figure 4.0-1.

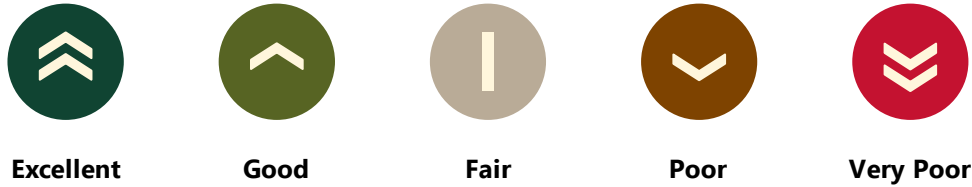


Figure 4.0-1 Qualitative Scale for Indicators of Ecological Function
A 5-point, Harvey Ball scale.

Figure Credit Ben Shumaker (2017) after Consumer Reports.

The qualitative scale rating each reach's performance by ecological indicator ranges from Excellent to Very Poor. These terms are intended to make relative comparisons between Stevenson's various reaches and may not be comparable to other assessments of similar or related factors in the same or separate locations.

45 Further, the ratings are assigned depending on whether the indicator describes a sign of health or degradation. Examples of the range of conditions and rationale for each indicator include:

Physical Environment:

- Available Floodplain Areas – Provide storage capacity and attenuate fluctuations in flow, filter pollution, and provide habitat. Highest rating for areas with intact, functioning floodplains, lowest rating for areas with heavily degraded, disconnected, or eliminated floodplains.
- Riparian Vegetation – Support healthy water quality, quantity, and habitat. Highest rating for intact, functioning native plant assemblages, lowest rating for areas with heavily degraded or eliminated native vegetation.
- Shoreline Stability – Soil type affects susceptibility to erosion, landslide, liquefaction and other geological hazards. Stabilization structures intended to protect development often degrade natural sediment transport processes. Hard armoring is sometimes applied as an ineffective solution to slope stability issues other than erosion. Highest rating for areas with minimal hazards and lack of stabilization structures, lowest rating for areas with severe risk and extensive armoring.

Biological Environment:

- Fish Blocking Culverts – Culverts that allow waterbodies to flow under roads and other developed areas are sometimes too small or disconnected from the stream channel making them unpassable for fish.
- Permanently Protected Areas – Community designated parks, preserves, and open space, and public/private land with legally established conservation easements help limit development that can degrade natural conditions. Highest rating for areas with permanent protection from future development/alterations, lowest rating for areas with no such protections.
- Priority Habitats & Species – Certain plants and animals are listed as threatened or endangered, at risk for decreased populations or extinction. Highest rating for areas with such habitats or species present, lowest rating for areas where they are not.
- Wetland Acreage – Wetlands filter pollutants, provide habitat, and moderate hydrologic cycles. Highest rating for reaches with high functioning wetlands, lowest when wetlands are not present.

Altered Conditions:

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- 303(d) Listings – Water pollution including toxics, excess nutrients, and elevated temperatures affect aquatic and human health. Highest rating for areas with clean, cool water, lowest rating for areas with contaminated and warmer water.
- Impervious Surface Area – Impervious surfaces prevent water filtration, increase erosion, and provide preclude on riparian habitat functions. Highest rating for areas without impervious surfaces, lowest for areas with high proportions of impervious surface area.
- Overwater Roads & Structures – When structures, including bridges, are built overwater, their foundations alter water courses and they provide refuge for predators of anadromous fish. Areas without such structures receive the highest rating, areas with numerous structures receive the lowest rating.
- Setbacks to OHWM – The location of buildings with roofs and other structures such as roads, parking, and railroad landward of OHWM. The replacement of riparian vegetation with impervious surfaces and other impacts of development close to the water’s edge (such as light and noise) impacts shoreline ecological functions. Highest rating for areas with greater setback distance, lowest rating for smallest setbacks.
- Urban Runoff – The amount and quality of runoff water entering a stream impact water quality levels, including pollutants and temperature. Highest rating for areas with minimal smallest catchment areas and most robust levels of treatment, lowest rating for reaches with disproportionately large catchment areas with a lack of treatment.

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To create the Overall rating in the indicator summary tables, value scoring was assigned (Excellent=2, Good=1, Fair=0, Poor=-1 and Very Poor=-2) and an average of relevant indicators was calculated. A Jenks Breaks method was then applied to separate the division between the 5 ratings within the overall score with breaks occurring at plus or minus 0.1 and 0.5. In cases where a reach with several Good or several Poor ratings would mathematically result in a Very Good or Very Poor rating, the Overall rating was held as Good or Poor. While this approach allowed an average to be calculated *quantitatively*, the assessment remains fundamentally *qualitative*. The scoring points do not have actual or precise data value, they are not intended to provide any quantitative analysis of the indicator conditions, and were only used to help roll-up the information into a composite rating.

4.0.2 Connection between Indicators & Characterization Maps

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A variety of data and technical information was considered in preparing this report. Attributes with geo-referenced data can be displayed as maps, connecting data values to geographic location. These maps are used to help visually describe existing conditions and are shown in the Appendix C Map Portfolio and include a study of optional shoreline jurisdiction for landslide hazard areas. Also, some map pages include related tabular data (e.g. tallies and basic statistics) that are reflected in the reach description text. Building on the relationships between ecosystem-wide processes, shoreline ecological functions, and reach-scale indicators described in Table 1.2-1, Table 4.0-1 below is organized by attribute categories in the order they are presented in each reach description, and provides a cross-reference to the maps by number. This allows the description of current shoreline conditions both by narrative text and visual display of the data and technical information. Only a few indicators described by text are not depicted visually, including Fish Blocking Culverts, Protected Areas, Priority Habitat & Species, and 303(d) water quality data.

Table 4.0-1 – Characterization Maps & Attributes

Reach-scale Attribute	Description	Map Number
Preliminary Shoreline Jurisdiction	Approximate extent of SMP jurisdiction (current), approximate extent of SMP jurisdiction (predesignation), approximate extent of landslide hazard areas considered for optional jurisdiction.	1
Physical Environment		
Land Cover	USGS gap analysis program (GAP) data showing forested, shrub-covered, grass-covered, non-vegetated, and water areas. Includes tabular summary of vegetation/land cover.	2
Soil	USGS Soil Survey Geographic Database (SSURGO) and US Forest Service data.	3
Contours	LiDAR-derived 10- and 100-foot contours provided by Skamania County GIS.	4
Liquefaction Hazards	Displays hazard categories for land movement during earthquakes.	5
Geologic Hazards	Stevenson Critical Areas Hazard Map showing potentially unstable slopes, landslide hazard areas, scarps, and unstable soils. Includes memo from PBS Engineering, 2007.	5A
Floodplains	FEMA FIRM, Zone A on Map 530161 A, Panels 01-02 (Red) and Map 530160, Panel 425 (Yellow).	6
Channel Migration Zones	Department of Ecology Map and coarse-scale analysis of likely Channel Migration Zones (CMZs) in Skamania County. Includes memo.	6A
Flowage Easements	Based on County easements records and shows vertical elevation of all flowage easements maintained by the Corps of Engineers for the Bonneville Dam Project.	6B
Biological Resources		
PHS Data	WDFW Priority Habitat and Species (PHS) Wildlife GIS data. Includes species list by reach.	7
Wetlands	USFWS National Wetlands Inventory and Stevenson Critical Areas Wetland Map showing potential wetlands as identified by JD White and Associates in 2007. Includes acreage of wetlands.	8
Land Use & Altered Conditions		
Existing Land Use	County parcel data using Department of Revenue (DOR) codes (derived and categorized from Skamania County Assessor's database).	9
Future Land Use	Map from 2013 Stevenson Comprehensive Plan designating areas for different types of residential and trade uses.	9A
Zoning	Map developed by Skamania County GIS using County and City maps.	10
Archeology/Historic Resources	Washington State Department of Archaeology and Historic Preservation (DAHP), includes publicly available information, excludes sensitive information.	14
Public Access		
Public Ownership	Public land includes all land owned by federal, state, or local government agencies. "Rights-of-way" were not classified as "Public". Areas not covered by parcel dataset (i.e., large portion of the Columbia River) were classified as "Public". Data for length and area in public ownership included and specific recreation areas also noted.	11
Restoration Opportunities		
Impervious Surfaces	County data was used to calculate impervious area (square feet) and linear distance of impervious surface (feet). Includes tabular data for impervious surface types.	12
Rooftops	County data on rooftops within shoreline area and measuring rooftop distance to OHWM. Includes tabular data for building number and size.	13
Shoreline Modifications	Aerial photo-derived data by Skamania County GIS. Includes tabular data on armoring length, island dimensions, and size of docks/piers.	15
Fish Passage Barriers	WDFW Fish Passage and Diversion Screening Inventory Database. Includes reports for identified barriers..	16

115 **4.1 Columbia River Reach 1 – East Urban Area**



Figure 4.1-1 Columbia River Reach 1
Bedrock outcroppings and railroad berms characterize shoreline structure
Photo Credits: Department of Ecology (2007), Ben Shumaker (2013), Department of Ecology (2007).

120 The physical shoreline of Columbia River Reach 1 is located entirely within Skamania County and east of the City's downtown waterfront. However, some small areas of shorelands and 2 associated wetlands from this reach extend into inside city limits. The shorelands occur along the Kanaka Creek Underpass road, and the wetlands are located on the north side of SR 14, affecting 3 properties having commercial, stormwater utility, and residential uses. Beyond these areas, the City has elected to predesignate the shorelines of this reach that are located outside existing City boundaries. In total, this comprises ~5,555 linear feet of Columbia River shoreline and 256 acres of shoreline jurisdiction area, 26.1 acres of which are shorelands above the OHWM. The reach starts at the eastern urban growth boundary line at Nelson Creek and ends downstream at the eastern city limits and Kanaka Creek. This reach is a shoreline of statewide significance.

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Table 4.1-1 – Columbia River Reach 1 Land Use Trends

Future Land Use							
	Low Density Residential	High Density Residential	Low Intensity Trade	High Intensity Trade	Total		
	5%	2%	92%	1%	100%		
Current Zoning							
	Residential	Public	Resource	Commercial	Industrial	Total	
	7%	0%	0%	93%	0%	100%	
Existing Land Use							
	Undeveloped	Residential	Public	Resource	Commercial	Industrial	Total
	3%	24%	62%	0%	10%	0%	100%
Shoreline Preferred Uses							
	Undeveloped	Single –Family Residential	Water-Oriented	Non-Water Oriented	Total		
	3%	17%	11%	69%	100%		
Land Ownership							
	Private	Local Government	State or Federal Government	Total			
	67%	20%	13%	100%			

The projected land uses of this reach primarily involve commercial uses, however almost 25% of the reach is currently used for residential purposes. While 62% is devoted to public uses, 69% of the reach's development

130 is non-water-oriented. Since only 3% of land in this reach is undeveloped, and 2/3rds of the land is privately owned, opportunities to expand commercial uses or shoreline preferred uses are minimal. Known archaeological, cultural, or historical resources within the reach include one public cemetery.

4.1.1 Summary of Ecological Functions

Indicators of Ecological Functions—CR1

		Physical Environment			Biological Environment			Altered Conditions			Overall			
		Available Floodplain Area	Riparian Vegetation	Shoreline Stability	Fish-Blocking Culverts	Permanently Protected Areas	PHS Listings	Wetland Acreage	303(d) Listings	Impervious Surface Area		Overwater Roads & Structures	Setbacks to OHWM	Urban Runoff
Water Quality	Sediment Transport		↑	↓	↓	↓		↑	↓	↓		↓	↓	↓
	Nutrient & Toxic Filtration	↓	↑			↓		↑	↓	↓		↓	↓	↓
	Temperature Regulation		↑			↓	↑		↓			↓	↓	↓
Water Quantity	Water Storage & Flow Regulation	↓	↑		↓			↑		↑	↓		↓	↓
Habitat	Input of Organics & LWM	↓	↑	↓		↓	↑			↑				↑
	Connectivity to Suitable Habitat		↑	↓	↓	↓	↑	↑		↑	↓	↓		↑

135 4.1.2 Physical Environment

135 **Available Floodplain Areas-** The available floodplain for the Columbia River has been inundated by, and is fully controlled by operations at, the Bonneville Dam. The US Army Corps of Engineers maintains flowage easements for all properties in the reach. The Department of Ecology’s Preliminary Channel Migration Zone Map for this reach was developed at a very coarse-scale, and recommends reliance on the Flood Insurance Rate Maps and/or site-specific delineations to more precisely determine the locations of channel migration zones (CMZs). The “Very Poor” rating of this reach relates to the Corps’ current inundation of the floodplain and its authority to further inundate the properties of this reach.

140 **Riparian Vegetation-** Riparian vegetation covers 73% of the land in this reach, with forest cover accounting for 41% of all land areas. This vegetative cover is similar to the Rock Cove Reach and among the most vegetated of all reaches characterized. Vegetation on shorelands includes deciduous lowland riparian forest and westside lowland confiner-hardwood forest. The lowland riparian forest cover overhangs the shoreline edge and help transfer terrestrial nutrients and energy to the aquatic system by adding organic debris, leaf litter, and insects (allochthonous inputs). The forested areas are a source of large woody material (LWM) recruitment. However, degraded vegetative cover exists along the berms for the BNSF railroad track and SR 14 and provide the main reason why this indicator is deemed “Good” rather than “Excellent”.

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Table 4.1-2 – Columbia River Reach 1 Land & Water Areas

Land Cover						
Forested	Riparian Vegetation			Non-Vegetated Land	LAND TOTAL	Water
	Shrub	Grass	Vegetated Subtotal			
10.6 ac	2.6 ac	5.8 ac	19.0 ac	7.1 ac	26.1 ac	229.9 ac
40.6%	10.0%	22.2%	72.8%	27.2%	100%	-

155 **I Shoreline Stability-** The “Fair” rating has been applied to this shoreline reach, which is characterized by a mix of rock outcroppings and fill slopes for the BNSF railroad. The reach’s soil types include differing slope categories of Skamania and Stevenson soils. Skamania soils offer a very fine sandy loam which is Well Drained and has a Moderate availability of water storage. Stevenson soils are loams which are also Well Drained, but offer a High availability of water storage. In most cases these soil types are not subject to high erosion hazards, however, when Stevenson loams exist on very steep slopes—as they do in limited areas in the center of this reach—their erosion hazard is Severe.

160 Knowledge of Geologic Hazard Areas in this reach is less robust than in other reaches within city limits. However, the City’s Geologic Hazards Map includes coverage of some key hazard types. Known soils with severe erosion hazard are detailed above, debris flow hazards are identified at the outlet of Kanaka Creek, and potentially unstable slopes (slopes greater than 25%) can be found along the shoreline (Maps 4 and 5A).
165 Despite the presence of railroad berms similar to Columbia River Reach 3, liquefaction potential is considered Bedrock and subject to minimal concern.

4.1.3 Biological Environment

170 **I Fish-Blocking Culverts-** Culverts flank this reach on the east and west. Both the culvert/fish passage on the western edge and the culvert on the eastern edge are considered 100% passable by WDFW. A 100% passable culvert is also identified at the outlet of Vallett Creek. Local reconnaissance also identifies culverts at Vallett Creek and Lutheran Church Road and connecting the wetlands in the center of this reach with the Columbia River. Fish passage through these culverts is unknown. Though passability is a lesser concern, the sheer number of culverts in this reach justifies the “Fair” rating.

175 **I Permanently Protected Areas-** No areas in this reach are subject to permanent protective covenants or environmentally protective deed restrictions, though the Port of Skamania is seeking to protect “Slaughterhouse Point” as mitigation for nearby development. Cemetery District ownership provides some informal protection of the shoreline based on operations at the Stevenson Cemetery. Of the privately owned properties in this reach, only a small portion is subject to the conservation covenant developed for the Chinidere Mountain Estates subdivision (2017). The remainder of the reach is privately owned and not subject to permanent conservation covenants. While this reach is rated as “Fair” currently, this reach could be considered “Good” if the Port includes protections for Slaughterhouse Point.

180 **U Priority Habitat & Species-** The PHS priority habitat types within the reach include one lacustrine littoral habitat at the outlet of Kanaka Creek and two palustrine wetlands as discussed above. The PHS species within the reach include salmonids (Chinook, Coho, Dolly Varden, Chum, Pink Salmon, Coastal Cutthroat, Sockeye, and Steelhead), white sturgeon (*Acipenser transmontanus*), and northern spotted owl (*Strix occidentalis caurina*). The monitored non-PHS species within the reach includes the sand roller (*Percopsis transmontana*).

Some threat to aquatic habitat exists based on the spread of milfoil. The condition of these habitat and species types has not been evaluated, but their presence is a positive ecological indicator and rate this reach as "Good".

Wetland Acreage- A total of five wetlands are mapped within the reach for a total of 1.72 acres of NWI and local inventory wetlands. All of these wetlands are palustrine forested wetlands. Three are located between SR 14 and the BNSF tracks and two are located north of SR 14. All of these wetlands drain to the Columbia River and are considered associated wetlands. While the condition of each wetland has not been evaluated their presence is positive and carries a "Good" rating.

4.1.4 Altered Conditions

303(d) Listings- The Columbia River within this reach has a Category 5 listing for temperature and through a 3-state memorandum of understanding the EPA is developing total maximum daily load (TMDL) protocols to address the water quality deficiency. This reach is also subject to pollution from Dioxin as a Category 4A pollutant subject to a TMDL from the EPA. The Columbia is also a Category 2 water of concern for pH, PCBs, Chlordane, and 4,4'-DDE. The "Very Poor" rating results from these multiple listings.

Impervious Surface Area- The 1.6 ac total impervious surface coverage in this reach is comparatively low and makes up only 6.2% of its land area. The "Good" rating of the reach is based on its relative lack of impervious coverage and the comparatively low average coverage of the individual lots.

Table 4.1-3 – Columbia River Reach 1 Impervious Surface Comparison

Impervious Surface Areas				
	Total Impervious Area	% Land Covered by Impervious Surfaces	Mean Impervious % of Developed Lots	Median Impervious % of Developed Lots
Reach	1.6 ac	6.2%	16.4%	10.9%
Total Jurisdiction	29.4 ac	14.4%	46.3%	36.2%

Overwater Roads & Structures- Two private overwater structures are associated with the residential development in the eastern portion of this reach (denoted on Map 15 as J and K). Structure J is a residential deck that is not associated with boating. These 2 structures cover ~1,000 sf of the water's surface. The Port of Skamania maintains 2 public structures (denoted on Map 15 as H and I) at the Cascade Avenue boatlaunch, and one of them is removed on a seasonal basis to protect it from wave action caused by the winter's high east winds. There are no overwater roads, and other structures in in this "Fair" reach are limited to a concrete river height gage.

Setbacks to OHWM- Of the 19 total parcels in this reach, only 8 have been developed with structures, including only 3 with buildings in shoreline jurisdiction. The central tendencies for the distance of structures from the OHWM combine to equal ~30 ft and ~40 ft for buildings (Map 13). Structures in this context mean any building with a rooftop identified within Skamania County's GIS, as well as all other upland structures for parking, roads, or railroads. The setbacks in this reach are narrow relative to other portions of Stevenson's shoreline jurisdiction and this close proximity justifies this reach's rating of "Very Poor".

Table 4.1-4 – Columbia River Reach 1 Development Proximity to OHWM

Setbacks to OHWM				
	% of Lots with Construction	Smallest Setback	Mean Setback	Median Setback
Buildings	16.7%	1 ft	54 ft	24 ft
Any Structure	38.9%	1 ft	39 ft	24 ft

Urban Runoff- This reach contains only 11% of the total linear footage of shorelines in the Stevenson

225 area, but also contains the outlets of Kanaka, Vallett, and Nelson creeks as well as stormwater outfalls. Together these outlets contribute stormwater runoff from 54% of the Urban Area. Treatment levels for this stormwater range from the recent engineered solution for the Chinidere subdivision to natural filtration by riparian vegetation along the streams to no treatment where runoff from pavement/rooftops directly enters the waterbody. While this reach contains few engineered treatment systems, the relative lack of dense
230 development in most of the areas draining to this reach spares it from the “Very Poor” designation.

4.1.5 Public Access



Figure 4.1-2 Pebble Beach
A visual and physical access point in Columbia River Reach 1
Photo Credits: Ben Shumaker (2013), BergerABAM (2015).

235 The reach includes access to the Columbia River from the Port’s Pebble Beach. This small park is part of the larger Class IV – Sacred Place described in the Stevenson Comprehensive Plan and includes informal parking areas located in Columbia River Reach 1, approximately 0.1 miles of gravel trails, a picnic table, and park bench with views of the river. Physical access to the middle portion of the reach is limited because of the active operations along the BNSF tracks and the Stevenson Cemetery in the eastern end of the reach. The Port of Skamania’s Slaughterhouse Point provides a potential location for a public access site as part of a water trail. Public visual access to the shoreline is partially present in this reach by travelling SR 14 and
240 smaller public roads, however the immediate near shore view is obstructed by the elevated rail bed and no formal waysides or viewpoints are present.

4.1.6 Degraded Areas & Restoration Opportunities

Degraded conditions in this reach include:

1. Bonneville impoundment of the Columbia River and inundation of floodplains.

- 245
2. Character and coverage of riparian vegetation.
 3. Rip rap armoring of shorelines (BNSF/SR 14 berm).
 4. Culverts (railroad/highway berm and Lutheran Church Road).
 5. Unknown character of PHS listings.
 6. Unknown character and functions of wetlands.
- 250
7. Ecosystem-wide water quality concerns.
 8. Proximity of non-water-oriented and/or abandoned structures to OHWM.
 9. Quantity & unknown quality of stormwater runoff.

Specific opportunities to restore these degraded conditions will be addressed in detail in the Restoration Plan and may include replacing culverts, assessing habitat and wetland areas, preserving and enhancing canopy cover, etc.

255

4.2 Columbia River Reach 2 – Downtown Waterfront



Figure 4.2-1 Columbia River Reach 2
Downtown Stevenson's urbanized waterfront area

Photo Credits: Department of Ecology (2007).

260 Columbia River Reach 2 is located in the city and includes the downtown waterfront and ~4,175 linear feet of Columbia River shoreline. The reach starts at the eastern limits of the city at Kanaka Creek, and ends downstream at its western limits on the Columbia River, at the center of the BNSF railroad bridge over Rock Creek. There are 222 acres of total land and water area in this reach and 35 acres of land above the OHWM. Public agencies own 63% of land in this reach and 38% of shorelands are used by the public for recreational purposes. Commercial/industrial uses account for an additional 35% of land use, and the remainder is evenly split between undeveloped and residential. The reach includes two roads in addition to the BNSF tracks—

265 Cascade Avenue and Leavens Street. Nineteen structures and their associated parking add to the impervious surfaces within the reach. Only 30% of the land is developed with Water-Oriented uses.

There are no known archaeological, cultural, or historical resources within the reach, however, a series of interpretive signs help visitors understand some historic events and activities in the area.

270

Table 4.2-1 – Columbia River Reach 2 Land Use Trends

Future Land Use						
	Low Density Residential	High Density Residential	Low Intensity Trade	High Intensity Trade		Total
	0%	10%	19%	71%		100%
Current Zoning						
	Residential	Public	Resource	Commercial	Industrial	Total
	11%	32%	0%	40%	17%	100%
Existing Land Use						
Undeveloped	Residential	Public	Resource	Commercial	Industrial	Total
14%	14%	38%	0%	27%	8%	100%
Shoreline Preferred Uses						
	Undeveloped	Single –Family Residential	Water-Oriented	Non-Water Oriented		Total
	14%	10%	30%	47%		100%
Land Ownership						
	Private	Local Government	State or Federal Government		Total	
	37%	63%	0%		100%	

4.2.1 Summary of Ecological Functions

Indicators of Ecological Functions—CR2

		Physical Environment			Biological Environment			Altered Conditions			Overall		
		Available Floodplain Area	Riparian Vegetation	Shoreline Stability	Fish-Blockin g Culverts	Permanently Protected Areas	PHS Listings	Wetland Acreage	303(d) Listings	Impervious Surface Area		Overwater Roads & Structures	Setbacks to OHWM
Water Quality	Sediment Transport	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
	Nutrient & Toxic Filtration	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
	Temperature Regulation	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Water Quantity	Water Storage & Flow Regulation	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Habitat	Input of Organics & LWM	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
	Connectivity to Suitable Habitat	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔

275

4.2.2 Physical Environment

↔ Available Floodplain Areas- The available floodplain for the Columbia River has been inundated by, and is fully controlled by operations at, the Bonneville Dam. The US Army Corps of Engineers maintains flowage easements for all properties in the reach. The Department of Ecology’s Preliminary Channel Migration Zone

280 Map for this reach was developed at a very coarse-scale, and recommends reliance on the Flood Insurance Rate Maps and/or site-specific delineations to more precisely determine the locations of channel migration zones (CMZs). The “Very Poor” rating of this reach relates to the Corps’ current inundation of the floodplain and its authority to further inundate the properties of this reach.

285 **Riparian Vegetation-** Riparian vegetation covers only 52% of land in the Downtown Waterfront reach, with forest cover accounting for only 20% of all land areas. Most of the shoreline vegetation is found within the Port of Skamania’s park areas and along the residential shorelines. This reach contains the least vegetative cover of all reaches analyzed and has been deemed “Very Poor”. The limited vegetation within the shoreline jurisdiction is characterized by deciduous lowland riparian forest, which overhangs the shoreline edge providing allochthonous nutrient and energy inputs. The trees along the shoreline are a source of LWM recruitment. Specific degraded areas include the commercial/industrial areas operated by the Port of Skamania, Cascade Avenue and the BNSF railroad berm.

Table 4.2-2 – Columbia River Reach 2 Land & Water Areas

Land Cover							
Forested	Riparian Vegetation			Vegetated Subtotal	Non-Vegetated Land	LAND TOTAL	Water
	Shrub	Grass					
7.0 ac	3.5 ac	7.9 ac	18.4 ac	16.9 ac	35.3 ac	186.3 ac	
19.8%	10.0%	22.5%	52.2%	47.8%	100%	-	

295 **Shoreline Stability-** A mix of natural shoreline and armored slopes characterizes this “Good” rated reach, with the armoring occurring mostly along the industrial/manufacturing area of the eastern portion. As their name implies, the soils of this reach are classified as Stevenson soils having different slope categories. Stevenson soils are loams which are well drained, but offer a high availability of water storage. These soil types are not subject to high erosion hazards, and the erosion occurring along the Port of Skamania’s properties is a result of persistence wave action, not because of the soils inherent quality,

300 The terrain of this reach generally has minimal slope within shoreline jurisdiction (Map 4). The reach is not subject to liquefaction concerns (Map 5). According to the Stevenson Critical Areas and Geologic Hazards Map (Map 5A), there are no High Hazard geologic areas within the reach, however there are Moderate Hazard areas associated with the potentially unstable slopes (slopes greater than 25%) immediately adjacent to the OHWM.


305 The very western portion of this reach at the confluence with Rock Creek is seeing rapid aggradation as the Piper Road landslide overwhelms the sediment transport system. Shallow waters and partially dry lands result depending on the elevation of the Bonneville Pool.


4.2.3 Biological Environment

310 **Fish-Blocking Culverts-** One culvert is identified by WDFW in this reach at the eastern border and potentially just outside of shoreline jurisdiction. This culvert under 1st Street is categorized as a culvert/fishway and is considered 100% passable however many additional barriers exist further up Kanaka Creek outside of shoreline jurisdiction. This reach is rated as “Good” as a result.


Permanently Protected Areas- Ownership in this “Good” rated reach is dominated by the City and the Port of Skamania County. As mitigation for a nearby dredging project ~0.22 miles of the shoreline area, from

315 Stevenson Landing to East Point is required to be stabilized and restored and will be subject to ongoing protective agreements between the Port and the City. The remainder of the reach is privately owned and not subject to permanent conservation covenants.

320  **Priority Habitat & Species-** A lacustrine littoral habitat at the outlet of Kanaka Creek borders this reach on the east and habitat supporting waterfowl concentrations borders the western edge. PHS species within this reach include the salmonids of the Columbia River, white sturgeon, and northern spotted owl. Monitored non-PHS species within the reach include the ring-necked snake and sand roller. Some threat to aquatic habitat exists based on the spread of milfoil. The condition of these habitat and species types has not been evaluated, but their presence is a positive ecological indicator, and, like the other Columbia River reaches, justify a “Good” rating.

325  **Wetland Acreage-** There is one wetland from the local inventory in this reach; it is adjacent to Cascade Avenue, totals 0.21 acres, drains to the Columbia River, and is considered an associated wetland. The presence of this wetland is a positive ecological indicator and justifies the “Good” rating of this reach.

4.2.4 Altered Conditions

330  **303(d) Listings-** The Columbia River within this reach has a Category 5 listing for temperature and through a 3-state memorandum of understanding the EPA is developing total maximum daily load (TMDL) protocols to address the water quality deficiency. This reach is also subject to pollution from Dioxin as a Category 4A pollutant subject to a TMDL from the EPA. The Columbia is also a Category 2 water of concern for pH, PCBs, Chlordane, and 4,4'-DDE. The “Very Poor” rating results from these multiple listings.




335  **Impervious Surface Area-** This reach is the most urbanized and the most degraded (“Very Poor”) in terms of impervious surfaces. The 7.7 ac of impervious land cover is the most of any reach, and the average coverage of this reach’s small lots is also greater than any other reach or the Stevenson’s overall shoreline jurisdiction.

Table 4.2-3 – Columbia River Reach 2 Impervious Surface Comparison

Impervious Surface Areas				
	Total Impervious Area	% Land Covered by Impervious Surfaces	Mean Impervious % of Developed Lots	Median Impervious % of Developed Lots
Reach	7.7 ac	21.9%	60.6%	74.8%
Total Jurisdiction	29.4 ac	14.4%	46.3%	36.2%

340  **Overwater Roads & Structures-** The Port of Skamania County maintains 3 public overwater structures in this reach (denoted on Map 15 as E, F, and G). The Stevenson Landing pier at Russell Street at 3,500 sf is the biggest of these, and its flanking dolphins provide moorage for tourboats on the river. While some cosmetic upgrades have been proposed for Stevenson Landing, no structural or in-water work is currently being considered. This reach also contains a number of old pilings, some of which are programmed for removal during the Port’s waterfront restoration project. Until that time, the reach will remain ranked as “Poor”.

345  **Setbacks to OHWM-** Though more urbanized in terms of impervious surfaces close to the OHWM, this reach has surprisingly large setbacks for buildings. The “Good” rating is based on central tendencies for

350 building setbacks which equal ~120 ft from the OHWM. Structures such as roads, parking areas and other development are typically located closer to the shoreline, but still nearly 100 ft away. A trend toward larger setbacks is similar to other reaches within city limits, which are typically larger than those of the reaches that have been predesignated.

Table 4.2-4 – Columbia River Reach 2 Development Proximity to OHWM

Setbacks to OHWM				
	% of Lots with Construction	Smallest Setback	Mean Setback	Median Setback
Buildings	35.4%	20 ft	113 ft	121 ft
Any Structure	59.5%	0 ft	98 ft	87 ft

355 **Urban Runoff**- This reach makes up only 8% of the total linear footage in this report and accepts an even smaller amount of the overall Stevenson Urban Area’s stormwater (1%). Recent development in the catchment area for this area, including the Port of Skamania’s Tichenor Building and parking area and the City’s Cascade Avenue, use vegetated swales to control and treat stormwater before it enters the Columbia, however some direct runoff and/or untreated runoff still occurs, most notably at the Cascade Avenue boat launch. Because this reach accepts so little runoff and because the majority of what it does accept is treated, 360 the reach has been rated as “Good”.

4.2.5 Public Access

This reach is categorized as a Class IV – Sacred Place by the 2013 Stevenson Comprehensive Plan and contains six public access points to the river as well as approximately 0.5 miles of trail which connects all of the access facilities and meanders along the riverfront. This trail along this reach was developed as part of a coordinated system (Figure 4.6-2) and is subject to active erosion issues which the Port of Skamania hopes to fix as part of a large restoration project which will also add paved accessibility and pedestrian amenities. The six physical access points, listed from east to west, are described in detail below.



Figure 4.2-2 Downtown Stevenson Public Access, Eastern Access Points
Motorized and non-motorized access for recreation on the Stevenson Waterfront.

Photo Credits: Port of Skamania County (Unknown)

370 **Cascade Boat Ramp** is located at the east end of the reach and includes a public boat launch (concrete ramp), restrooms with a changing cabana, picnic tables, a grass lawn area, parking, a floating dock, and a gravelly beach for physical access to the water. Informational signage educates visitors of the area’s history and enhances the visual access opportunity. Kanaka Creek, a non-SMA stream, enters the Columbia at the upstream edge of this park.

375 **East Point Kite Beach** is located immediately downstream from the boat launch and is a favorite with kiteboarders. This visual and physical access point is a dedicated launch site, gives safe, easy access to the river, provides additional parking with broad views, and is located near the restroom and changing cabana which also serves the Cascade Boat Ramp. Physical access is limited to those able to traverse steep, rugged terrain to the water.

380 **Leaven’s Point** is set between Stevenson Landing and East Point Kite Beach. This small park features river views and picnic opportunities close to the river. Physical access is limited to those able to traverse steep, rugged terrain to the water.

385 Leavens Point is the location for a large access improvement and restoration project planned by the Port of Skamania County. The project will include large amounts of fill, a more gradually sloped area for physical public access, trail, amenities, and riparian vegetation.

390 **Stevenson Landing** is cruise ship pier from which passengers access the city. The pier is located on the Columbia River at river mile 150, in the Russell Street right-of-way. The pier is open to the public year-round for views of the Columbia River.

395 **Teo Park** is located in downtown Stevenson on the Columbia River at the southern terminus of Russell Street, just upland of Stevenson Landing. This park includes picnic tables, restrooms, and a grassy lawn on the riverbank with views of the river and the Gorge. An informational kiosk and a kinetic sculpture public art installation enhance the visitor experience.

400 **Bob’s Beach** is a dedicated access for windsurfing on the Columbia River. The park is located west of Teo Park and Stevenson Landing and features a gently sloped grass lawn, covered changing cabana, a spacious, easy launching area, gravel parking area, benches, picnic tables, and a water fountain. The park offers views and easy physical access to the water.

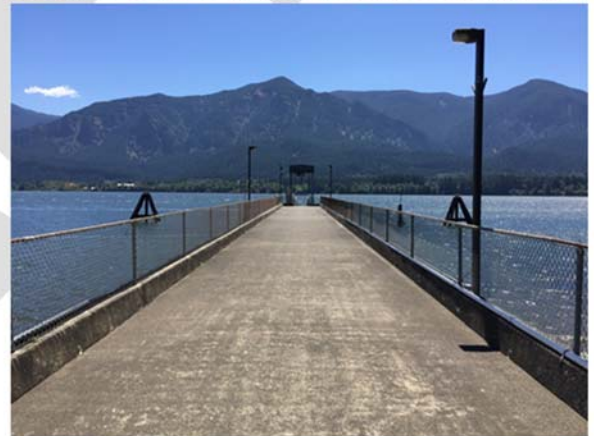


Figure 4.2-3 Downtown Stevenson Public Access, Central Access Points

Leavens Point, Stevenson Landing & Bob’s Beach provide visual, motorized and non-motorized access.

Photo Credits: BergerABAM (2015), BergerABAM (2015), Ben Shumaker (2013)

410 **4.2.6 Degraded Areas & Restoration Opportunities**

Degraded conditions in this reach include:

1. Bonneville impoundment of the Columbia River and inundation of floodplains.
2. Aggradation in lower Rock Creek.
3. Character and coverage of riparian vegetation.
- 415 4. Rip rap armoring of shorelines.
5. Active shoreline erosion along Port holdings.
6. Culverts (Kanaka Creek).
7. Unknown character of PHS listings.
8. Unknown character and functions of wetlands.
- 420 9. Ecosystem-wide water quality concerns.
10. Paved coverage (Cascade Avenue, Kanaka Creek Underpass, and parking areas).
11. Proximity of non-water-oriented and/or abandoned structures to OHWM.
12. Sheet pile at Leavens Point.
13. Abandoned pilings.
- 425 14. Quantity & unknown quality of stormwater runoff.

Specific opportunities to restore these degraded conditions will be addressed in detail in the Restoration Plan and may include dredging aggraded areas, incorporating soft armoring along river banks, preserving and enhancing canopy cover, assessing habitat and wetland areas, completing the Port/County Stevenson Waterfront Restoration & Enhancement Project, removing derelict piles, improving stormwater collection and treatment, etc.

430

4.3 Columbia River Reach 3 – West Urban Area



Figure 4.3-1 Columbia River Reach 3
Former industrial and transportation corridor

Photo Credits: Ben Shumaker (2015), Department of Ecology (2007), Ben Shumaker (2015).

Columbia River Reach 3 is located south of Rock Cove and west of the downtown waterfront. It includes ~8,000 linear feet of the Columbia River shoreline, and 396 acres of predesignated shoreline area. Only 34
435 acres of this reach are shorelands located above the OHWM. The reach is located outside the city limits and begins at the western boundary of Columbia River Reach 2 at the centerline of Rock Creek and ends downstream at the eastern boundary of Ashes Lake. The reach includes the full right-of-way for SR 14, the BNSF railroad, and privately owned properties. This reach is a shoreline of statewide significance.

Projected land use and existing zoning in this reach involve commercial or industrial trade uses, however, no
440 shorelands are currently devoted to those uses. A 2007 fire destroyed the large Co-Ply mill in this reach. While the property remains in use as an active place of business, more than 1/3rd of this the shoreline area in this reach is undeveloped (36%) and no land is currently devoted to Water-Oriented uses.

There are no known archaeological, cultural, or historical resources within the reach.

Table 4.3-1 – Columbia River Reach 3 Land Use Trends

Future Land Use						
	Low Density Residential	High Density Residential	Low Intensity Trade	High Intensity Trade		Total
	0%	0%	91%	9%		100%
Current Zoning						
	Residential	Public	Resource	Commercial	Industrial	Total
	0%	0%	4%	31%	65%	100%
Existing Land Use						
Undeveloped	Residential	Public	Resource	Commercial	Industrial	Total
36%	0%	39%	25%	0%	0%	100%
Shoreline Preferred Uses						
	Undeveloped	Single-Family Residential	Water-Oriented	Non-Water Oriented		Total
	36%	0%	0%	64%		100%
Land Ownership						
	Private	Local Government	State or Federal Government		Total	
	86%	1%	13%		100%	

445

4.3.1 Summary of Ecological Functions

Indicators of Ecological Functions—CR3

	Physical Environment			Biological Environment				Altered Conditions			Overall		
	Available Floodplain Area	Riparian Vegetation	Shoreline Stability	Fish-Blocking Culverts	Permanently Protected Areas	PHS Listings	Wetland Acreage	303(d) Listings	Impervious Surface Area	Overwater Roads & Structures		Setbacks to OHWM	Urban Runoff
Water Quality	Sediment Transport	↘	⊥	↗	↗		⊥	↗	↘		↘	↗	↘
	Nutrient & Toxic Filtration	↗	↘		↗	↗	⊥	↗	↘		↘	↗	↗
	Temperature Regulation		↘		↗	↗	↘	↗			↘	↗	↗
Water Quantity	Water Storage & Flow Regulation	↗	↘	↗			⊥		↘	⊥		↗	↘
	Input of Organics & LWM	↗	↘	⊥		↗	↘		↘				↗
Habitat	Connectivity to Suitable Habitat		↘	⊥	↗	↗	↘		↘	⊥	↘		↘

4.3.2 Physical Environment

450 **Available Floodplain Areas-** The available floodplain for the Columbia River has been inundated by, and is fully controlled by operations at, the Bonneville Dam. The US Army Corps of Engineers maintains flowage easements for all properties in the reach. The Department of Ecology’s Preliminary Channel Migration Zone Map for this reach was developed at a very coarse-scale, and recommends reliance on the Flood Insurance Rate Maps and/or site-specific delineations to more precisely determine the locations of channel migration zones (CMZs). The “Very Poor” rating of this reach relates to the Corps’ current inundation of the floodplain and its authority to further inundate the properties of this reach.

455 **Riparian Vegetation-** Riparian vegetation covers nearly two-thirds of the land in this reach, but forested lands make up only 28% of the land cover. This is composed of deciduous lowland riparian forest, which can be a source allochthonous inputs and for recruitment of LWM. However, this coverage is on the lower end of the range when compared to the other reaches of this report and is “Poor”. Specific degraded areas include former and/or sparsely used industrial sites and the berm supporting the BNSF railroad and SR 14.

460 **Table 4.3-2 – Columbia River Reach 3 Land & Water Areas**

Land Cover							
Forested	Riparian Vegetation			Vegetated Subtotal	Non-Vegetated Land	LAND TOTAL	Water
	Shrub	Grass					
9.6 ac	6.9 ac	5.6 ac	22.1 ac	12.1 ac	34.2 ac	396.7 ac	
28.2%	20.1%	16.4%	64.6%	35.4%	100%	-	

465 **Shoreline Stability-** A mix of natural shoreline and armored slopes characterizes the reach, with the armoring occurring mostly along the BNSF railroad/highway berm and in select locations of the industrial/manufacturing area at the far west of the reach. The reach’s soil types include Arents and Steever soils. Arents soils are composed of gravelly sandy loams and Steever soils are stony or gravelly clay loams. These soils both are Well Drained, and have Moderate availability of water storage.

470 Geologic hazards have not been mapped for many areas of this reach which are outside of city limits, but the areas of the reach with slopes greater than 25% have Moderate Hazard potentially unstable slopes (Map 5A) and the terrain is a result of the Cascade Landslide Complex. The railroad/highway berm has a High liquefaction potential in the event of earthquakes (Map 5).

475 The very eastern portion of this reach at the confluence with Rock Creek is seeing rapid aggradation as the Piper Road landslide overwhelms the sediment transport system. Shallow waters and partially dry lands result depending on the elevation of the Bonneville Pool. The relative lack of concerns in comparison to the other reaches characterized justifies the “Fair” rating.

4.3.3 Biological Environment

Fish-Blocking Culverts- There are no culverts identified on the WDFW inventory within this reach and an “Excellent” rating is easily justified.

480 **Permanently Protected Areas-** This reach is rated as “Very Poor” because there are no areas subject to permanent protective covenants or environmentally protective deed restrictions and because the entirety of this reach is under private ownership.

485 **Priority Habitat & Species-** The PHS priority habitat supporting waterfowl concentrations is located in this reach. PHS species within the reach include Columbia River salmonids, white sturgeon, and northern spotted owl. The only monitored non-PHS species within the reach is the ringneck snake. Some threat to aquatic habitat exists based on the spread of milfoil. The condition of these habitat and species types has not been evaluated, but their presence is a positive ecological indicator, and, like the other Columbia River reaches, justify a “Good” rating.

Wetland Acreage- The “Fair” rating is applied as a placeholder to this reach which contains no mapped local inventory or NWI wetlands (Map 8).

490 **4.3.4 Altered Conditions**

495 **303(d) Listings-** The Columbia River within this reach has a Category 5 listing for temperature and through a 3-state memorandum of understanding the EPA is developing total maximum daily load (TMDL) protocols to address the water quality deficiency. This reach is also subject to pollution from Dioxin as a Category 4A pollutant subject to a TMDL from the EPA. The Columbia is also a Category 2 water of concern for pH, PCBs, Chlordane, and 4,4'-DDE. The “Very Poor” rating results from these multiple listings.

500 **Impervious Surface Area-** Large areas of the formerly industrial sites in this reach contain extensive impervious surfaces, which cover 6.6 ac in total. A comparison of developed lot coverage is not available for this reach or the Ashes Lake reach based on the aggregation of certain data used in the analysis. However, visual reconnaissance indicates that impervious coverage in this reach is similar to the Rock Cove reach and has been rated as “Poor”.

Table 4.3-3 – Columbia River Reach 3 Impervious Surface Comparison

Impervious Surface Areas				
	Total Impervious Area	% Land Covered by Impervious Surfaces	Mean Impervious % of Developed Lots	Median Impervious % of Developed Lots
Reach	6.6 ac	19.3%	??	??
Total Jurisdiction	29.4 ac	14.4%	46.3%	36.2%

505 **Overwater Roads & Structures-** A private ~1,000 sf pier with a building (denoted on Map 15 as A) is located in the western portion of this reach. The aquatic area of the shoreline also includes a number of derelict pilings at various locations in this reach, including a high concentration east west of the former Co-Ply site. There are no overwater roads and this reach has been rated as “Fair”.

510 **Setbacks to OHWM-** No properties in this reach have buildings in shoreline jurisdiction, but nearly half are developed with roads, paved or gravel parking areas and the railroad. This predesignated reach has the closest combined central tendencies for setbacks to the OHWM at 20 ft. The “Poor” rating of the reach reflects the proximity of structures to the OHWM and lack of buildings.

515 **Table 4.3-4 – Columbia River Reach 3 Development Proximity to OHWM**

Setbacks to OHWM				
	% of Lots with Construction	Smallest Setback	Mean Setback	Median Setback
Buildings	0%	-	-	-
Any Structure*	42.9%	0 ft	24 ft	15 ft

*Based on data aggregated with Ashes Lake Reach. Average setbacks for structures include the proximity of Ash Lake Road and SR 14 to the OHWM of Ashes Lake.

520 **Urban Runoff**- While containing 15% of the linear footage of shorelines in the Stevenson Urban Area, this reach only accepts stormwater from 2% of that area. Separated from uphill drainage by the state highway and the railroad, the runoff entering the Columbia River in this reach comes only from shoreline properties. A "Very Good" rating for this reach is not justified because treatment of stormwater for these former industrial properties and transportation corridors is minimal and the reach is downstream from more degraded runoff areas.

4.3.5 Public Access

525 Physical and visual access to the Columbia River waterfront is limited because of the continuous presence of the elevated rail bed of the BNSF tracks and SR 14 and private ownership. The reach does not include any park benches, boat launches with access to the river, or trails. At the June 8, 2015 community vision workshop, attendees recommended improved shoreline access to the Columbia River waterfront with a preference for continued public access along the shoreline. The scope and style of this access will largely depend on the type of development that occurs along this reach. Development with a commercial or tourist focus should result in greater public physical and visual access, including a marina if the property owners wish to pursue opportunities for the best site identified in a 1995 study covering the mid-Columbia Gorge region. Development with an industrial focus may result in shoreline public access that is limited to viewpoints, overlooks, or other forms of visual access for safety and security issues.

4.3.6 Degraded Areas & Restoration Opportunities

535 Degraded conditions in this reach include:

1. Bonneville impoundment of the Columbia River and inundation of floodplains.
2. Aggradation in lower Rock Creek.
3. Character and coverage of riparian vegetation.
4. Rip rap armoring of shorelines.
- 540 5. Unknown character of PHS listings.
6. Ecosystem-wide water quality concerns.
7. Paved coverage (roads and former industrial site).
8. Proximity of non-water-oriented and/or abandoned structures to OHWM.
9. Abandoned pilings.
- 545 10. Quantity & unknown quality of stormwater runoff.

Specific opportunities to restore these degraded conditions will be addressed in detail in the Restoration Plan and may include dredging aggraded areas, incorporating soft armoring along river banks, preserving and

enhancing canopy cover, assessing habitat areas, removing heritage piles, improving stormwater collection and treatment, etc.

550 **4.4 Rock Creek Reach 1**



Figure 4.4-1 Rock Creek Reach 1, A Study of Contrasts
Lower Rock Creek with dense development and rapid aggradation, Upper Rock Creek with vegetation and a bedrock channel
Photo Credit: Ben Shumaker (2009), BergerABAM (2015).

555 Rock Creek Reach 1 includes the shoreline jurisdictional area associated with Rock Creek within the City's boundaries. On the east side of this stream, this reach covers the area within city limits from the approximate extension of Lasher Street downstream to the BNSF railroad trestle. This reach also runs along the west/south side of the stream from Ryan Allen Road at the upstream end to the BNSF railroad trestle at the downstream end. The southwestern boundary of this reach at the Rock Cove reach is hard to pinpoint, running southward over the Creek's deltaic deposits toward the trestle. This reach includes ~10,375 linear feet of shoreline, 44 acres of shorelands, and 4 acres of water within shoreline jurisdiction. This reach is not a shoreline of statewide significance.

560 A data collection error duplicated data for some of the parcels from Columbia River Reach 2 and included them within this reach. This prevents a similar reporting of existing land uses as completed in other reaches. Visual reconnaissance indicates that most of this reach located upstream from the Rock Creek Drive bridge is undeveloped or developed with residential uses. Public uses dominate the area near and downstream from the bridge, where the majority of the reach's Water-Oriented uses occur. In terms of zoning, the reach is primarily zoned as suburban residential, followed by smaller areas of multi-family residential, public use and recreation, and commercial zoning. There is both private and public land ownership within the reach.

565 Some of the roads within the reach include SW Rock Creek Drive, First Falls View Road, HH Ave, Holly Street, NW Still Cove Lane, Stevenson Transfer Site Road, Neyland Road, Bounty Way, and Ryan Allen Road.

570 The only known archaeological, cultural, or historical resource within the reach is the Skamania County Cemetery District's Iman Cemetery located near the Upper Falls.

4.4.1 Summary of Ecological Functions

Indicators of Ecological Functions—RC1

		Physical Environment			Biological Environment				Altered Conditions			Overall		
		Available Floodplain Area	Riparian Vegetation	Shoreline Stability	Fish-Blocking Culverts	Permanently Protected Areas	PHS Listings	Wetland Acreage	303(d) Listings	Impervious Surface Area	Overwater Roads & Structures		Setbacks to OHWM	Urban Runoff
Water Quality	Sediment Transport		⬆️	⬇️	⬇️	⬆️		⬇️	⬇️	⬇️			⬇️	⬇️
	Nutrient & Toxic Filtration	⬇️	⬆️			⬆️		⬇️	⬇️	⬇️		⬆️	⬇️	⬇️
	Temperature Regulation		⬆️			⬆️	⬇️		⬇️			⬆️	⬇️	⬆️
Water Quantity	Water Storage & Flow Regulation	⬇️	⬆️		⬇️			⬇️		⬇️	⬇️		⬇️	⬇️
Habitat	Input of Organics & LWM	⬇️	⬆️	⬇️		⬆️	⬇️			⬇️				⬇️
	Connectivity to Suitable Habitat		⬆️	⬇️	⬇️	⬆️	⬇️	⬇️		⬇️	⬇️	⬆️		⬇️

4.4.2 Physical Environment



Available Floodplain Areas- The floodplain for lower Rock Creek below the falls to the Columbia River

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confluence is subject to much of the same inundation and flowage easements as the Columbia River and Rock Cove. This inundation causes the sediments of Rock Creek to sink prior to its confluence with the Columbia River. The stream’s bed has risen since construction of the Bonneville Dam and with it, the stream’s capacity to hold floodwaters has been diminished. The capacity of the floodplain has been further reduced by the presence of dredge spoils deposited in the floodplain after the Piper Road Landslide of 2007. These deposits, located on County and private land on the east bank of Rock Creek and downstream from the pedestrian bridge, are intended to be temporary and must be removed according to the Corps permits issued for the emergency dredging. The available floodplain for upper Rock Creek above the falls has not been impacted by the Bonneville Dam or the flowage easements of the USACE. The rating for this indicator is “Poor”, reflecting the balance between the differing dynamics of the upper and lower stream. The Department of Ecology’s Preliminary Channel Migration Zone Map for this reach identifies the potential existence of CMZs and recommends better delineation of potential CMZs at the site-specific level.

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Riparian Vegetation- With 91% total coverage, including 63% forest cover, this reach provides

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“Excellent” vegetative cover. The westside lowlands conifer-hardwood and deciduous lowland riparian forested shorelands are a source of allochthonous inputs and LWM recruitment. Where degraded areas exist in this reach they occur in the lower portion of Rock Creek at the City and County public works and service facilities and at the BNSF and SR 14 berms, where there is very little existing shoreline vegetation.

595 **Table 4.4-1 – Rock Creek Reach 1 Land & Water Areas**

Land Cover						
Forested	Riparian Vegetation			Non-Vegetated Land	LAND TOTAL	Water
	Shrub	Grass	Vegetated Subtotal			
27.3 ac	6.6 ac	5.7 ac	39.6 ac	3.9 ac	43.5 ac	4.0 ac
62.7%	15.2%	13.2%	91.1%	8.9%	100%	-



Shoreline Stability- The lower portion of this reach is armored, while the portions above Vancouver Avenue are more natural. Arents, Skamania, Steever and Stevenson soils all exist along this reach, with Steever’s stony clay loams and Stevenson’s loams as the primary soil types. All soils in this reach are Well Drained. The Stevenson soils have a High availability of water storage compared to the Moderate availability of the other reaches. Based on their slop the Steever soils of this reach present a High erosion hazard. Many portions of this reach are categorized as High Hazard areas based on the Debris Flow Hazard and Landslide areas, and Unstable Soils (Map 5A). The areas of the reach with slopes greater than 25% present a Moderate Hazard. The northern portion of the reach was adjacent to the Piper Road Landslide of 2007 and might be expected to be destabilized based on the changes in the watercourse of Rock Creek downstream of the 70’ waterfall. The lower portions of this reach have been overwhelmed by the amount of sediment that has entered the system as a result of the landslide, and the “Very Poor” rating is easily understood.

4.4.3 Biological Environment



Fish-Blocking Culverts- The WDFW inventory for this reach identifies the highway bridge as a passable crossing. Neither the railroad nor the Rock Creek Drive bridges are identified by WDFW, but both are passable. The reach is subject to an identified natural passage barrier for migrating Chinook and steelhead based on the dramatic 70’ waterfall located ~0.85 miles upstream from the Columbia River. There are no culverts identified on the WDFW inventory within this reach. This combination of passable manmade barriers and impassable natural barriers justifies the “Fair” rating for this reach.



Permanently Protected Areas- In the middle of this west/south bank of this reach, the full shoreline jurisdiction of the Angel Heights subdivision (2005) is covered by a conservation easement benefitting the City. This ~0.33 mile stretch of Rock Creek only allows uses that protect the public health and safety or involve stewardship. Further, 19 other uses are specifically prohibited as inconsistent with the easement. Much of the lower portion of this reach is under City and County ownership providing some confidence in responsible stewardship. The remainder of this “Excellent” reach is subject to private ownership without conservation covenants.



Priority Habitat & Species- The PHS priority habitat type within the reach includes palustrine aquatic habitat. PHS species within it include northern spotted owl and residential coastal cutthroat and rainbow trout, as well as migratory Chinook and steelhead. The monitored non-PHS species within the reach is the ringneck snake. Some threat to aquatic habitat exists based on the spread of milfoil and the Skamania County Noxious Weed Board has considered treatments in this reach. Having fewer overall listings than the Columbia River reaches, this reach carries a “Fair” rating. Future assessment of the condition of these habitat and species types may lead to a change of this indicator’s rating.

630 **Wetland Acreage-** The “Fair” rating is applied as a placeholder to this reach which contains no mapped local inventory or NWI wetlands (Map 8).

4.4.4 Altered Conditions

635 **303(d) Listings-** The lower portion of this reach below Rock Creek Drive is subject to the same Category 5 temperature listing as the Columbia River. The EPA has not yet developed total maximum daily load (TMDL) protocols to address this water quality deficiency. This listing does not include the upper portion of the reach, and there are no other types of 303(d) listings occur within this reach.

640 **Impervious Surface Area-** This highly urbanized reach contains 6.6 ac of total impervious surfaces, which exist at a higher proportion than the overall shorelines reviewed in this report. However, individual developed lots have less impervious surfaces when compared to the shorelines of the entire Stevenson Urban Area. Impervious surfaces are concentrated near and south of the bridge at Rock Creek Drive. The reach has been rated “Poor”.

Table 4.4-2 – Rock Creek Reach 1 Impervious Surface Comparison

Impervious Surface Areas				
	Total Impervious Area	% Land Covered by Impervious Surfaces	Mean Impervious % of Developed Lots	Median Impervious % of Developed Lots
Reach	6.6 ac	15.1%	22.1%	17.3%
Total Jurisdiction	29.4 ac	14.4%	46.3%	36.2%

645 **Overwater Roads & Structures-** This “Very Poor” reach has the most overwater roads & structures in Stevenson’s shoreline jurisdiction. The Rock Creek Drive bridge, a pedestrian-only bridge and the SR 14 bridge are existing public structures. A deteriorating private deteriorating dock (denoted on Map 15 as D) is located on private property between SR 14 and the BNSF railroad. Additionally, the BNSF railroad bridge marks the southern extent of this reach. In total, these structures cover ~14,000 sf of the stream. The Rock Creek Drive and SR 14 bridges both have piers placed in the water. The City is seeking grant funding to replace the Rock Creek Drive bridge with a freespan structure. The BNSF bridge is proposed for replacement and preliminary designs indicate a removal of the bridgehead piers/revetments that constrict the channel under the bridge. The replacement project may also provide for the removal of some pilings and other dilapidated structures in the vicinity.

655 **Setbacks to OHWM-** Nearly half of the properties in this reach are developed in some fashion and most of the developed lots contain some type of building. The central tendencies for the location of these buildings combine to ~100 ft from the OHWM, and structures are typically located slightly closer. This reach is rated as “Good” and contrasts interestingly with the development setback trends of Rock Creek Reach 2 which has a lesser rating.

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Table 4.4-3 – Rock Creek Reach 1 Development Proximity to OHWM

Setbacks to OHWM				
	% of Lots with Construction	Smallest Setback	Mean Setback	Median Setback
Buildings	40.4%	11 ft	93 ft	87 ft
Any Structure	47.4%	6 ft	88 ft	77 ft

Urban Runoff- The shoreline for this reach of Rock Creek accounts for 20% of the total shoreline linear
 665 footage in this report and accepts stormwater runoff from 9% of the Stevenson Urban Area. The runoff it
 does accept has minimal treatment. While WSDOT’s engineered system treats stormwater from the state
 highway, far more untreated runoff is entering this reach. Within shoreline jurisdiction, this happens directly
 from parking lots and other paved areas. Of most concern is the lack of treatment of runoff entering at
 Vancouver Avenue’s outfall, which drains a large section of Stevenson’s historic residential core. This reach
 670 has been rated as “Very Poor” based on these trends.

4.4.5 Public Access

The reach is part of a Class IV – Sacred Place described in the Stevenson Comprehensive Plan and includes
 visual public access from the Mill Pond Trail and pedestrian walkways along the SW Rock Creek Drive Bridge,
 which provides views of Rock Creek. The County Fairgrounds are located on the west side of Rock Creek,
 675 south of SW Rock Creek Drive and provide informal physical access to the stream. There is a pedestrian
 bridge implemented as part of a coordinated pedestrian circulation plan (Figure 4.6-2) to connect the
 Fairgrounds with downtown Stevenson.



Figure 4.4-2 Rock Creek Reach 2
 A potential public access site and pedestrian bridge on lower Rock Creek
 Photo Credits: Michelle Ruzek (2012), Ben Shumaker (2015).

At the June 8, 2015 community vision workshop conducted for the SMP update, stakeholders stated that
 680 sedimentation from the Piper Road Landslide is causing scenic enjoyment issues for recreationalists and
 visitors. The attendees also discussed how during low flows or low dam levels, this sedimentation prevents
 fishers and kayakers from travelling between Rock Creek to the Columbia River. Additionally, stakeholders
 suggested improving the surfacing and amenities offered along the trails near Rock Creek and providing
 continuous public access along the shoreline. Access to the Rock Creek Falls is described below. Potential
 685 visual access could be developed on the Angel Heights Park site. Other projects considered include

development of a public physical access and picnic site at the location of the dilapidated tug boat dock between the SR14 and railroad bridges.

4.4.6 Restoration Opportunities



Figure 4.4-3 Potential Restoration Opportunities, Rock Creek Reach 1
Dilapidated structures and City-owned facilities present opportunities for restoration.

Photo Credits: Berger/ARAM (2015), Ben Shumaker (2013), Ben Shumaker (2013)

690 4.4.6 Degraded Areas & Restoration Opportunities

Degraded conditions in this reach include:

1. Bonneville impoundment of the Columbia River and inundation of floodplains.
2. Aggradation in lower Rock Creek.
- 695 3. Shoreline instability near the Piper Road Landslide.
4. Character and coverage of riparian vegetation (lower Rock Creek).
5. Rip rap armoring of shorelines.
6. Presence of piers in Rock Creek for the SR 14 and Rock Creek Drive bridges.
7. Unknown character of PHS listings.
8. Ecosystem-wide water quality concerns.
- 700 9. Paved coverage (roads and parking areas).
10. Proximity of non-water-oriented and/or abandoned structures to OHWM (abandoned residential and former transportation structures).
11. Abandoned pilings.
12. Quantity & unknown quality of stormwater runoff.
- 705 13. Quality of stormwater entering from Vancouver Avenue stormwater outfall.

Specific opportunities to restore these degraded conditions will be addressed in detail in the Restoration Plan and may include dredging aggraded areas, incorporating soft armoring along river banks, preserving and enhancing canopy cover, assessing habitat areas, removing heritage piles, improving stormwater collection and treatment, etc. Additional solutions will be based in part on the June 8, 2015 community vision workshop where it was stated that infrastructure at the mouth of Rock Creek constrains natural processes such as stream flow/mobility.

710 4.5 Rock Creek Reach 2

Rock Creek Reach 2 includes shoreline jurisdictional area associated with the north/east bank of Rock Creek in the unincorporated Urban Area. This includes the area ~5,325 linear feet from the City boundary at about Lasher Street upstream to the urban area boundary just north of Ryan Allen Road. The reach includes 30 acres of land and 7 acres of water. The City is choosing to predesignate this reach in preparation for future annexation. This reach is not a shoreline of statewide significance.

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Projected land uses in this reach have a residential focus. However, currently only 25% of the land is used for residential purposes. County ownership of 37% of this reach will likely preclude future residential development. None of the land in this reach is currently used for water-oriented purposes. There are no known archaeological, cultural, or historical resources within the reach.

Table 4.5-1 – Rock Creek Reach 2 Land Use Trends

Future Land Use						
	Low Density Residential	High Density Residential	Low Intensity Trade	High Intensity Trade		Total
	93%	0%	3%	3%		100%
Current Zoning						
	Residential	Public	Resource	Commercial	Industrial	Total
	100%	0%	0%	0%	0%	100%
Existing Land Use						
Undeveloped	Residential	Public	Resource	Commercial	Industrial	Total
41%	25%	20%	14%	0%	0%	100%
Shoreline Preferred Uses						
	Undeveloped	Single –Family Residential	Water-Oriented	Non-Water Oriented		Total
	41%	25%	0%	33%		100%
Land Ownership						
	Private	Local Government	State or Federal Government			Total
	61%	37%	1%			100%

4.5.1 Summary of Ecological Functions

Indicators of Ecological Functions—RC2

		Physical Environment			Biological Environment			Altered Conditions			Overall		
		Available Floodplain Area	Riparian Vegetation	Shoreline Stability	Fish-Blocking Culverts	Permanently Protected Areas	PHS Listings	Wetland Acreage	303(d) Listings	Impervious Surface Area		Overwater Roads & Structures	Setbacks to OHWM
Water Quality	Sediment Transport		⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️			⬆️	⬆️
	Nutrient & Toxic Filtration	⬆️	⬆️			⬆️	⬆️	⬆️	⬆️		⬆️	⬆️	⬆️
	Temperature Regulation		⬆️			⬆️	⬆️	⬆️			⬆️	⬆️	⬆️
Water Quantity	Water Storage & Flow Regulation	⬆️	⬆️		⬆️		⬆️		⬆️	⬆️		⬆️	⬆️
Habitat	Input of Organics & LWM	⬆️	⬆️	⬆️		⬆️	⬆️		⬆️			⬆️	⬆️
	Connectivity to Suitable Habitat		⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️	⬆️

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4.5.2 Physical Environment

730 **Available Floodplain Areas-** The floodplain for the very southern portion of this reach below the falls subject to much of the same inundation and flowage easements as the Columbia River and Rock Cove. This inundation causes the sediments of Rock Creek to sink prior to its confluence with the Columbia River. The stream’s bed has risen since construction of the Bonneville Dam and with it, the stream’s capacity to hold floodwaters has been diminished. The available floodplain for upper Rock Creek above the falls has not been impacted by the Bonneville Dam or the flowage easements of the USACE. The rating for this indicator is “Good”, reflecting the limited coverage of lower Rock Creek in this reach. The Department of Ecology’s Preliminary Channel Migration Zone Map for this reach identifies the potential existence of CMZs and recommends better delineation of potential CMZs at the site-specific level.

740 **Riparian Vegetation-** The most vegetated of all reaches, the “Excellent” vegetative cover adds up to 94% of all land within the reach, including 75% covered by forest. These forests are westside lowlands conifer-hardwood and deciduous lowland riparian, and they provide a source of LWM recruitment and allochthonous inputs. Degraded areas in this reach are localized to the area affected by the Piper Road Landslide, where the exposed scarp and landslide mass have little regrowth.

Table 4.5-2 – Rock Creek Reach 2 Land & Water Areas

Land Cover							
Forested	Riparian Vegetation			Vegetated Subtotal	Non-Vegetated Land	LAND TOTAL	Water
	Shrub	Grass					
22.6 ac	1.3 ac	4.7 ac		28.6 ac	1.8 ac	30.4 ac	6.5 ac
74.4%	4.2%	15.5%		94.1%	5.9%	100%	-


745 **Shoreline Stability-** Shoreline armoring is not evident in this reach. Steeper soils predominate, with very small pockets of Stevenson soils at the very upper and very lower portions. The Steeper soils are Well Drained stony and gravelly clay loams. They have a Moderate availability of water storage and present a Severe erosion hazard because of the steep slopes that are present.


750 A large portion of the center of this reach was part of the Piper Road Landslide of 2007 and is still subject to some scarp toppling and slow rotational ground movement. This area is the best known, and highest hazard area characterized in this report and the landslide has deposited an overwhelming amount of sediment into the reach. This “Very Poor” reach also includes Debris Flow Hazards, Unstable Soils and other High Hazard areas as well as Moderate Hazard areas having slopes greater than 25% (Map 5A).

4.5.3 Biological Environment


755 **Fish-Blocking Culverts-** This reach is subject to an identified natural passage barrier based on the 70’ waterfall located ~0.85 miles upstream from the Columbia River. There are no culverts identified on the WDFW inventory within this reach; however the natural barriers of this reach justify its “Very Poor” rating.

Permanently Protected Areas- No areas in this reach are subject to permanent protective covenants or environmentally protective deed restrictions. County ownership provides some protection of the area near the 2007 Piper Road landslide. However, Skamania County has recently sold property within this reach to private owners, and it is unknown whether this trend will continue and the “Fair” rating is appropriate.

760  **Priority Habitat & Species-** No PHS priority habitat types are designated within the reach. PHS species within it include resident coastal cutthroat, winter steelhead, rainbow trout, and northern spotted owl. Some threat to aquatic habitat exists based on the spread of milfoil. The comparative lack of PHS listings in this reach is interpreted as a negative ecological indicator, as reflected in the “Poor” rating.

765  **Wetland Acreage-** The “Fair” rating is applied as a placeholder to this reach which contains no mapped local inventory or NWI wetlands (Map 8).

4.5.4 Altered Conditions

770  **303(d) Listings-** There are no 303(d) listings within this “Excellent” reach.



 **Impervious Surface Area-** In terms of both total coverage (1.1 ac) and reach-wide percentage of coverage (3.6%), this reach has less overall pavement, gravel, or rooftops than any other. The larger lot size of the properties in this reach contributes to the average impervious coverage that less than half of the next closest reach. The “Excellent” rating reflects the lack of comparable reaches within in this analysis.

Table 4.5-3 – Rock Creek Reach 2 Impervious Surface Comparison

Impervious Surface Areas				
	Total Impervious Area	% Land Covered by Impervious Surfaces	Mean Impervious % of Developed Lots	Median Impervious % of Developed Lots
Reach	1.1 ac	3.6%	7.9%	4.5%
Total Jurisdiction	29.4 ac	14.4%	46.3%	36.2%

775  **Overwater Roads & Structures-** Ryan Allen Road crosses Rock Creek at the westernmost portion of this reach. Its freespan from bank to bank covers ~2,000sf and is located ~30 ft above water level. No other roads or structures have been constructed over the waters of this “Good” reach.



780  **Setbacks to OHWM-** Only a quarter of the properties in this reach are developed with buildings, but central tendencies combine to equal ~75 ft, these buildings’ location is closer to the OHWM than the other Rock Creek reach. More than half of the properties contain some kind of developed structures, and the central tendencies in this case combine to equal ~100 ft. The reach has a “Fair” rating overall.

Table 4.5-4 – Rock Creek Reach 2 Development Proximity to OHWM

Setbacks to OHWM				
	% of Lots with Construction	Smallest Setback	Mean Setback	Median Setback
Buildings	23.0%	71 ft	77 ft	74 ft
Any Structure	61.5%	0 ft	95 ft	89 ft

785  **Urban Runoff-** Unlike most others, this reach drains a proportionate amount of the Stevenson Urban Area (13%) compared to its linear footage (10%). While engineered treatment systems are relatively infrequent, the lack of development density in the areas draining to this reach makes this a lesser concern and the “Good” designation is appropriate.

4.5.5 Public Access

Despite the large amount of public ownership in this reach, there is limited public access. Visual public access is limited to the Ryan Allen Road bridge. Physical public access does not currently exist.



Figure 4.5-1 Upper & Lower Rock Creek Falls
Upper Falls as seen from Rock Creek Reach 1, Lower Falls showing inaccessibility and mass wasting based on the Piper Road Landslide
Figure Credit: Tamara Toppel (2008), Department of Transportation (2007).

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Rock Creek Falls, especially Upper Rock Creek Falls, is identified as a potential Class IV – Sacred Place in the Comprehensive Plan. Development of amenities at this location has been debated in the past and often declined to keep this hidden wonder a locals-only amenity. At the June 8, 2015 community vision workshop conducted for this update, stakeholders suggested improving the trails near Rock Creek waterfalls. If developed as a visual public access site, the County-owned property in this reach could be considered for accessory parking, access trails, and a picnic area. Physical access to this reach is likely to remain difficult.

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4.5.6 Degraded Areas & Restoration Opportunities

Degraded conditions in this reach include:

1. Bonneville impoundment of the Columbia River and inundation of floodplains.
2. Aggradation in lower Rock Creek.
3. Shoreline instability near the Piper Road Landslide.
4. Character and coverage of riparian vegetation (Piper Road Landslide).
5. Unknown character of PHS listings.
6. Proximity of non-water-oriented and/or abandoned structures to OHWM.
7. Quantity & unknown quality of stormwater runoff.

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Specific opportunities to restore these degraded conditions will be addressed in detail in the Restoration Plan and may include dredging aggraded areas, preserving and enhancing canopy cover, increasing connectivity between sections of Rock Creek, assessing habitat areas, improving stormwater collection and treatment, etc.

4.6 Rock Cove



Figure 4.6-1 Rock Cove
An aerial photo showing early sedimentation impacts from the Piper Road landslide
Figure Credit: Department of Ecology (2007).

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The Rock Cove reach includes the waterbody otherwise known as the Stevenson Mill Pond, Stevenson Lake, Rock Creek Pond, or Hegewald Mill Pond. Rock Cove is located in the city, is connected to Rock Creek Reach 1 at its mouth, and is to the north of Columbia River Reach 3, separated by the highway/railroad berm. The reach includes all of Rock Cove, the northern fill slope of SR 14, and western portions of the Skamania County Fairgrounds, the Columbia Gorge Interpretive Center, other County-owned properties, and three residential properties. Including the islands in the cove, there are ~18,800 linear feet of shoreline, 69 acres of water, and 35 acres of shorelands. There is presently a lack of clarity regarding whether this reach is a shoreline of statewide significance.

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More than 60% of land in this reach is owned by public agencies and 82% of the land is developed with some type of use. The majority of land (56%) is used for commercial purposes, and 54% of land use is Water-Oriented. Projected land uses focus on adding commercial and public uses.

Outside of the resources curated by the Interpretive Center, there are no known archaeological, cultural, or historical resources within the reach.

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Table 4.6-1 – Rock Cove Land Use Trends

Future Land Use						
	Low Density Residential	High Density Residential	Low Intensity Trade	High Intensity Trade	Total	
	0%	2%	98%	0%	100%	
Current Zoning						
	Residential	Public	Resource	Commercial	Industrial	Total
	14%	55%	0%	30%	0%	100%
Existing Land Use						
Undeveloped	Residential	Public	Resource	Commercial	Industrial	Total
18%	10%	16%	0%	56%	0%	100%
Shoreline Preferred Uses						
	Undeveloped	Single –Family Residential	Water-Oriented	Non-Water Oriented	Total	
	18%	4%	54%	25%	100%	
Land Ownership						
	Private	Local Government	State or Federal Government	Total		
	39%	55%	6%	100%		

4.6.1 Summary of Ecological Functions

Indicators of Ecological Functions—RCO

		Physical Environment			Biological Environment			Altered Conditions			Overall		
		Available Floodplain Area	Riparian Vegetation	Shoreline Stability	Fish-Blockin g Culverts	Permanently Protected Areas	PHS Listings	Wetland Acreage	303(d) Listings	Impervious Surface Area		Overwater Roads & Structures	Setbacks to OHWM
Water Quality	Sediment Transport		⬇️	⬇️	⬇️	⬇️		⬇️	⬇️			⬇️	⬆️
	Nutrient & Toxic Filtration	⬇️	⬇️			⬇️	⬇️	⬇️	⬇️		⬆️	⬇️	⬇️
	Temperature Regulation		⬇️			⬇️	⬇️		⬇️		⬆️	⬇️	⬆️
Water Quantity	Water Storage & Flow Regulation	⬇️	⬇️		⬆️		⬆️		⬇️	⬇️	⬇️	⬇️	⬇️
	Input of Organics & LWM	⬇️	⬇️	⬆️		⬆️	⬆️		⬇️				⬆️
Habitat	Connectivity to Suitable Habitat		⬆️	⬆️	⬆️	⬆️	⬆️		⬇️	⬇️	⬆️		⬆️

835 **4.6.2 Physical Environment**

⬇️ Available Floodplain Areas- The available floodplain for Rock Cove has been inundated by, and is fully controlled by operations at, the Bonneville Dam. The US Army Corps of Engineers maintains flowage easements for all properties in the reach. The sedimentation of Rock Creek impacts Rock Cove as well, and

840 the lake’s capacity to hold floodwaters has been diminished. Rock Cove is a lake and not subject to channel migration. The “Very Poor” aspects of this reach relate to the Corps’ current inundation of the floodplain and its authority to further inundate the properties of this reach.

845 **Riparian Vegetation-** Similar in character to the Columbia River Reach 1 east of Stevenson, this “Good” rated reach provides vegetative cover over 77% of the land in this reach, including 37% of the land that is forested. The forested areas along the Cove and on its islands are a source of allochthonous nutrient and energy inputs and LWM recruitment. Similar to other reaches, these forested areas include westside lowlands conifer-hardwood forest and deciduous lowland riparian forest. This reach is unique from the other reaches of this characterization based on the large open-lawn areas of the County Fairgrounds and Columbia Gorge Interpretive Center, which increases grass covered lands to 28%. Degradation exists along the transportation corridors of Rock Creek Drive and SR 14, and at a former industrial site on the west end of the Cove.

850 **Table 4.6-2 – Rock Cove Land & Water Areas**

Land Cover						
Forested	Riparian Vegetation		Vegetated Subtotal	Non-Vegetated Land	LAND TOTAL	Water
	Shrub	Grass				
12.6 ac	4.1 ac	9.7 ac	26.4 ac	8.1 ac	34.6 ac	4.0 ac
36.5%	12.0%	27.9%	76.5%	23.5%	100%	-

855 **Shoreline Stability-** A mix of natural shoreline and armored slopes are present in this reach, with the natural areas located primarily along the islands and the Columbia Gorge Interpretive Center property. The reach’s soil types include Arents, Bonneville and Steever soils. Arents soils are composed of gravelly sandy loams. Bonneville soils are stony sandy loams. Steever soils are stony or gravelly clay loams. Arents and Steever soils both are Well Drained, and have Moderate availability of water storage. Bonneville soils are Somewhat Excessively Drained, have a Very Low availability of water storage, and a Slight erosion hazard. The Rock Cove reach is rated as “Good” and has limited Geologic Hazards. The slopes greater than 25% present a Moderate Hazard as potentially unstable slopes (Map 5A). The greatest hazard in the reach is the High liquefaction potential of the railroad/highway berm if an earthquake were to occur.

860

4.6.3 Biological Environment

865 **Fish-Blocking Culverts-** There are no culverts identified on the WDFW inventory within this reach, however, local reconnaissance identified a culvert in the western portion of this reach for Foster Creek. The ability of fish to pass through this culvert is unknown. The presence of this culvert is all that prevents application of the “Excellent” rating.

870 **Permanently Protected Areas-** Between the Columbia Gorge Interpretive Center, Skamania County, and rights-of-way for the City’s Rock Creek Drive and WSDOT’s SR 14, the entire shoreline is stewarded by public or non-profit entities. These public and non-profit entities will ensure that a degree of responsible environmental protection during shoreline use and development within this “Good” rated reach; however, no areas in this reach are subject to permanent protective covenants or environmentally protective deed restrictions.

875 **Priority Habitat & Species-** The PHS priority habitat types within the reach support waterfowl concentrations and palustrine aquatic habitat. The PHS species within the reach include northern spotted owl, Canada goose, Chinook, steelhead, and resident and rainbow trout and coastal cutthroat. The only monitored non-PHS species within the reach is the ringneck snake. Some threat to aquatic habitat exists based on the spread of milfoil. This reach shares the “Good” rating with the Columbia River reaches which also serve several species and habitat purposes.

880 **Wetland Acreage-** A locally performed wetland inventory identifies a 0.03-acre wetland upland of Rock Creek Drive near the Ryan Allen Road intersection and a 0.27 acre emergent wetland on the upland side of Rock Creek Drive near the Rock Cove Assisted Living Facility. Neither is identified on the NWI maps (Map 8). The presence of these wetlands is a positive ecological indicator and justifies the “Good” rating of this reach.

4.6.4 Altered Conditions

885 **303(d) Listings-** This reach is subject to the same Category 5 temperature listing as the Columbia River. The EPA has not yet developed total maximum daily load (TMDL) protocols to address this water quality deficiency. No other 303(d) listings occur within this reach.

890 **Impervious Surface Area-** A total of 5.7 ac of impervious areas are located in this reach which has a higher proportion of such surfaces than that of the overall jurisdiction characterized in this report. However, the proportion of each developed lot that is covered by impervious surfaces is less than the overall proportion, a difference is explained in part by the reach’s comparatively large lot sizes. The “Poor” designation of this reach reflects its similarity to Columbia River Reach 3 and Rock Creek Reach 1.

Table 4.6-3 – Rock Cove Impervious Surface Comparison

Impervious Surface Areas				
	Total Impervious Area	% Land Covered by Impervious Surfaces	Mean Impervious % of Developed Lots	Median Impervious % of Developed Lots
Reach	5.7 ac	16.5%	25.3%	21.9%
Total Jurisdiction	29.4 ac	14.4%	46.3%	36.2%

895 **Overwater Roads & Structures-** Two apparently communal overwater structures are located adjacent to each other in the northern portion of this in this reach along Rock Creek Drive (denoted on Map 15 as B and C). Ownership of these 2 linear docks is likely private, however they are located on Skamania County property, accessed from City right-of-way, and rarely used. The total surface area of these structures is ~1,000 sf. Rock Cove also contains numerous pilings driven in during its history as a mill pond. There are no overwater roads and this reach has been rated as “Fair”.

900 **Setbacks to OHWM-** Nearly half of the properties in this reach contain buildings, and their setbacks average nearly 100 ft from the OHWM. Roads and other structures are even more ubiquitous and, though the closest structure is only 15 ft away, when combined the central tendencies for setbacks are still ~100 ft from the OHWM. The “Good” rating of this reach reflects the larger setbacks and the larger trend separating city reaches from predesignated reaches.

905 **Table 4.6-4 – Rock Cove Development Proximity to OHWM**

Setbacks to OHWM				
	% of Lots with Construction	Smallest Setback	Mean Setback	Median Setback
Buildings	45%	71 ft	108 ft	96 ft
Any Structure	80%	15 ft	88 ft	92 ft

910 **Urban Runoff**- Rock Cove receives runoff from 17% of the Stevenson Urban Area while making up 36% of shoreline linear footage. Runoff enters primarily from Foster Creek and from storm systems along SR 14 and Rock Creek Drive. Treatment levels for this runoff are mixed, including engineered detention ponds for new subdivisions, pervious pavement and wet wells for Skamania County, and untreated runoff from roads and parking areas. The Angel Heights & Hidden Ridge subdivisions maintain engineered systems prior to contributing runoff to this reach, as does the City for some transportation corridors. Natural filtration by soil filtration and vegetation uptake is relied on within Foster Creek, and limited amounts of untreated runoff enter the Cove. While on the cusp of "Fair, the "Poor" rating is more appropriate for this reach based on the density of development in the drainage area and overall lack of stormwater treatment.

915 **4.6.5 Public Access**

The entire Rock Cove reach is considered a Class IV – Sacred Place in the Stevenson Comprehensive Plan. This Sacred Place includes visual and physical access to Rock Cove from the Columbia Gorge Interpretive Center, Rock Creek Park, and the Skamania County Fairgrounds. The reach includes interpretive signs, park benches with views of the river, an informal nonmotorized boat launch with access to the water on the western side of Rock Cove, walkways, and the Mill Pond Trail.

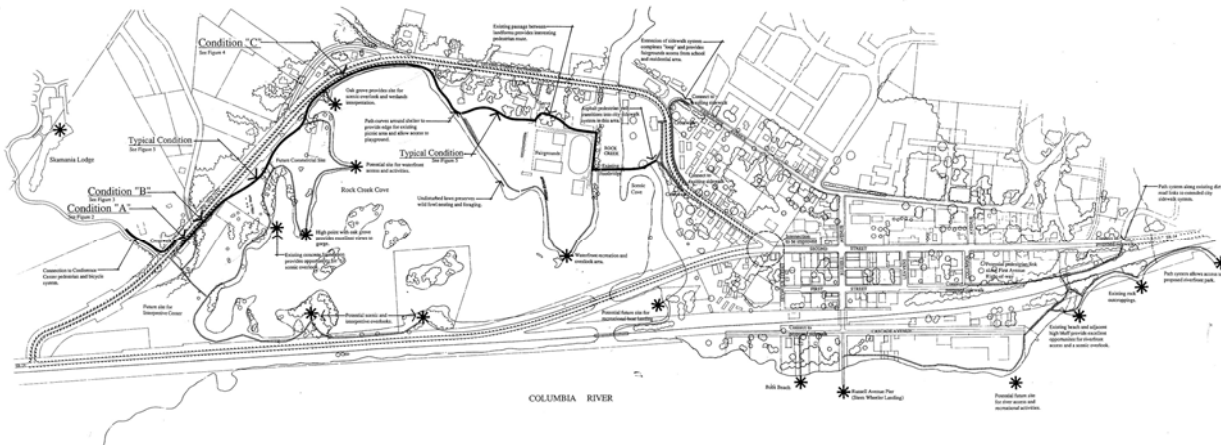


Figure 4.6-2 Pedestrian & Bicycle Links for Rock Cove, Columbia River Reach 1, & Columbia River Reach 2
A plan from 1991, partially implemented
Figure Credit: Walker Macy (1991).

925 The multi-use Mill Pond Trail along the Cove is a result of a long term effort to connect Skamania Lodge to downtown Stevenson, and easement exists to provide additional pedestrian pathways along the western, county-owned property including the assisted living facility and the currently vacant developable parcels to its north. The Comprehensive Plan describes potential enhancements for this area, including landscaping plans for publicly owned areas and dredging of sediments deposited after the Piper Road Landslide.

930 Stakeholders at the June 8, 2015 community vision workshop recommended public access improvements such as: (1) improving the existing boat launch, which is in a state of disrepair; (2) improving access for recreational activities including fishing, boating, swimming, and kayaking; and (3) improving shoreline access to the Columbia River waterfront, with a preference for continuous public access along the City's shoreline rather than disconnected segments of differing surfacing and amenity levels.

935 Metal strapping and other metal debris from structures associated with the former mill on Rock Cove as identified in the 1997 Rocke Cove Environmental Evaluation and Comprehensive Plan. This derelict metal was described as hazardous to recreational users of the Cove.

4.6.6 Degraded Areas & Restoration Opportunities



Figure 4.6-3 Potential Restoration Opportunities, Rock Cove
Pilings and other relics of Rock Cove's industrial past.

Photo Credits: BergerABAM (2015), Ben Shumaker (2013)

Degraded conditions in this reach include:

1. Bonneville impoundment of the Columbia River and inundation of floodplains.
- 940 2. Aggradation in lower Rock Creek.
3. Character and coverage of riparian vegetation.
4. Rip rap armoring of shorelines.
5. Culverts (Foster Creek).
6. Unknown character of PHS listings.
- 945 7. Unknown character and functions of wetland.
8. Ecosystem-wide water quality concerns.
9. Paved coverage (roads and parking areas).
10. Proximity of non-water-oriented and/or abandoned structures to OHWM (abandoned former industrial fences, metal strapping and debris, and concrete structures).
- 950 11. Abandoned pilings.
12. Quantity & unknown quality of stormwater runoff.

Specific opportunities to restore these degraded conditions will be addressed in detail in the Restoration Plan and may include dredging aggraded areas, replacing the culvert for Foster Creek under Rock Creek Drive, incorporating soft stabilization along banks, preserving and enhancing canopy cover, assessing habitat and wetland areas, removing heritage piles, removing former industrial fences and structures, improving stormwater collection and treatment, etc.

955

4.7 Ashes Lake

960 The Ashes Lake reach includes only the extreme eastern portion of Ashes Lake, two road rights-of-way (Ash Lake and Mallicott), and small portions of privately owned properties. This reach is located within the Stevenson Urban Area, west of Skamania Lodge and north of SR 14, and is being pre-designated. The Columbia River frontage south of the highway and railroad is part of Columbia River Reach #3, previously described. The shoreline jurisdictional area of this reach includes all lands extending landward for 200 feet from the OHWM, including floodplains within 200 feet. This reach is not a shoreline of statewide significance. Land uses in this reach are projected to involve commercial trade, though 63% of the reach is currently undeveloped. The primary existing land use within this reach is road right-of-way, with smaller areas that are undeveloped and private/commercial forest. The reach includes no known archaeological, cultural, or historical resources.

965

Table 4.7-1 – Ashes Lake Land Use Trends

Future Land Use						
	Low Density Residential	High Density Residential	Low Intensity Trade	High Intensity Trade	Total	
	0%	0%	100%	0%	100%	
Current Zoning						
	Residential	Public	Resource	Commercial	Industrial	Total
	0%	0%	37%	63%	0%	100%
Existing Land Use						
Undeveloped	Residential	Public	Resource	Commercial	Industrial	Total
63%	0%	0%	37%	0%	0%	100%
Shoreline Preferred Uses						
	Undeveloped	Single –Family Residential	Water-Oriented	Non-Water Oriented	Total	
	63%	0%	0%	37%	100%	
Land Ownership						
	Private	Local Government	State or Federal Government	Total		
	100%	0%	0%	100%		

970 **4.7.1 Summary of Ecological Functions**

Indicators of Ecological Functions—AL

		Physical Environment			Biological Environment				Altered Conditions			Overall	
		Available Floodplain Area	Riparian Vegetation	Shoreline Stability	Fish-Blocking Culverts	Permanently Protected Areas	PHS Listings	Wetland Acreage	303(d) Listings	Impervious Surface Area	Overwater Roads & Structures		Setbacks to OHWM
Water Quality	Sediment Transport		↘	↗	↗	↗	⊥		↗	↘		⊥	↗
	Nutrient & Toxic Filtration	↘	↘			↗	⊥		↗	↘		⊥	↘
	Temperature Regulation		↘			↗	⊥		↗		↘	⊥	⊥
Water Quantity	Water Storage & Flow Regulation	↘	↘		↗		⊥			↘	↗	⊥	↘
Habitat	Input of Organics & LWM	↘	↘	↗		↗	⊥			↘			↘
	Connectivity to Suitable Habitat		↘	↗	↗	↗	⊥	⊥		↘	↗	↘	↗

4.7.2 Physical Environment


↘ **Available Floodplain Areas-** The available floodplain for Ashes Lake has been inundated by, and is fully controlled by operations at, the Bonneville Dam. The US Army Corps of Engineers maintains flowage easements for all properties in the reach. Ashes Lake is a lake and not subject to channel migration. The “Very Degraded” aspects of this reach relate to the Corps’ current inundation of the floodplain and its authority to further inundate the properties of this reach.


↘ **Riparian Vegetation-** Specific percentages of vegetative cover have not been developed for this reach, based on its small size. However, the land is primarily non-vegetated based on the presence of Ash Lake and Mallicott roads. Where vegetation exists in this “Very Poor” reach, it includes westside lowlands conifer-hardwood forest, deciduous lowland riparian forest, and some shrub and grass lands. The forested area along Ashes Lake is a source of LWM recruitment and allochthonous inputs to the aquatic system.


↗ **Shoreline Stability-** The stony and gravelly clay loam Steever soils of this reach are partially armored along this reach. These soils are well drained and have Moderate ratings for both available water storage and erosion hazards. The fine-grained analysis leading to Stevenson’s 2008 Critical Areas Map does not cover this reach and Skamania County’s coarse-scale mapping does not identify hazards, however areas of the reach with slopes greater than 25 percent may be potentially unstable.


Knowledge of Geologic Hazard Areas in this reach is less robust than in other reaches within city limits. However, areas with slopes greater than 25% present a Moderate geologic hazard, and other factors affecting shoreline stability are expected to be similar to Rock Cove, a similar road-constricted impoundment of the Columbia River backwaters. These reaches share the “Good” rating.

4.7.3 Biological Environment


995  **Fish-Blocking Culverts-** The culverts under Ash Lake Road and the SR 14/BNSF berm are located outside of the Stevenson Urban Area, and there are no culverts identified on the WDFW inventory within this reach and an “Excellent” rating is easily justified.

 **Permanently Protected Areas-** No permanently protected areas have been identified in this reach. However, the “Good” rating reflects the environmental stewardship required of public agencies for the Ash Lake Road and SR 14 rights-of-way along the water’s edge provide some assurance of responsible shoreline development.

1000  **Priority Habitat & Species-** The PHS priority habitat types within the reach support waterfowl concentrations. The PHS species within the reach include northern spotted owl and the ringneck snake, a monitored species. Some threat to aquatic habitat exists based on the spread of milfoil. Since this reach supports fewer priority species than the Rock Cove reach, it carries a “Fair” rating.

1005  **Wetland Acreage-** The “Fair” rating applies to this reach as a neutral placeholder since it contains no mapped local inventory or NWI wetlands (Map 8).

4.7.4 Altered Conditions

 **303(d) Listings-** There are no 303(d) listings within this “Excellent” reach.


1010  **Impervious Surface Area-** A comparison of full percentages of impervious surface coverage in this reach is not available at this time. However, the reach is characterized as “Very Poor” based on the presence of the paved Ash Lake Road and the graveled Mallicott Road which cover 1.6 ac of this small reach.

Table 4.7-2 – Ashes Lake Impervious Surface Comparison

Impervious Surface Areas				
	Total Impervious Area	% Land Covered by Impervious Surfaces	Mean Impervious % of Developed Lots	Median Impervious % of Developed Lots
Reach	1.6 ac	??	??	??
Total Jurisdiction	29.4 ac	14.4%	46.3%	36.2%

 **Overwater Roads & Structures-** This “Excellent” reach contains no overwater roads or structures.


1015  **Setbacks to OHWM-** No buildings are located in this reach, and the closest structure on any lot within the reach is 106 ft from the OHWM. However, the method of data collection combined the roads of this reach with Columbia River Reach 3. Visual reconnaissance confirms that structures associated with the roads of this reach are located as close as 25 ft to the OHWM, and justify its “Poor” rating.

Table 4.7-3 – Ashes Lake Development Proximity to OHWM

Setbacks to OHWM

	% of Lots with Construction	Smallest Setback	Mean Setback	Median Setback
Buildings	0%	-	-	-
Any Structure*	33.3%	106 ft	106 ft	106 ft

*Based only on lots, road data is aggregated with Columbia River Reach 3 and located closer to the OHWM than 106 ft.

1020 **I Urban Runoff-** Thought it only contains 1% of the total shoreline linear footage of the area, this reach accepts stormwater from 5% of the Stevenson Urban Area. There is a relative lack of development within that drainage area and most runoff occurs from gravel roads with some natural filtration. The “Fair” rating is appropriate at this time.

4.7.5 Public Access

1025 The Ashes Lake reach includes very limited public physical access to Ashes Lake and the Columbia River. The Ash Lake-Mallicott road corridor functions as an informal portion of the bicycle/pedestrian Trail of the Gods between Stevenson and the Bridge of the Gods. There are no boat ramps, interpretive signs, or parks. There is a small area along Ash Lake Road that some may use as a pull-off for viewing the lake, but sight lines are limited. Ashes Lake is also visible from the SR 14 travel corridor.

4.7.6 Degraded Areas & Restoration Opportunities

Degraded conditions in this reach include:

1. Bonneville impoundment of the Columbia River and inundation of floodplains.
2. Character and coverage of riparian vegetation.
3. Rip rap armoring of shorelines.
- 1035 4. Unknown character of PHS listings.
5. Unknown character and functions of wetland.
6. Paved coverage (roads).
7. Proximity of non-water-oriented and/or abandoned structures to OHWM.
8. Quantity & unknown quality of stormwater runoff.

1040 Specific opportunities to restore these degraded conditions will be addressed in detail in the Restoration Plan and may include incorporating soft armoring along banks, preserving and enhancing canopy cover, assessing habitat areas, removing heritage piles, improving stormwater collection and treatment, etc.

5.0 Use Analysis

The SMA and the state's shoreline guidelines (WAC 173-26-176) acknowledge and support increased human use of shoreline properties. This use, according to the state legislature, is subject to "ever increasing pressures of additional uses," which must be managed through increased coordination so as to avoid "the inherent harm [of] an uncoordinated and piecemeal development of the state's shorelines." In short, the state wants to see shorelines put to their highest and best use. As the shoreline guidelines state (WAC 173-26-201(2)(d)), the preferences and priorities for shoreline uses involve:

- Reserve appropriate areas for protecting and restoring ecological functions to control pollution and prevent damage to the natural environment and public health.
- Reserve shoreline areas for water-dependent and associated water-related uses.
- Reserve shoreline areas for other water-related and water-enjoyment uses that are compatible with ecological protection and restoration objectives.
- Locate single-family residential uses where they are appropriate and can be developed without significant impact to ecological functions or displacement of water-dependent uses.
- Limit non-water-oriented uses to those locations where the above described uses are inappropriate or where non-water-oriented uses demonstrably contribute to the objectives of the SMA.

This section of the inventory and characterization report discusses the current uses of Stevenson's shorelines, whether current uses are preferred or water-oriented, analyzes potential future uses of shoreline areas, and provides recommendations for accommodating such uses in the future. This discussion is possible based on a detailed analysis of GIS data for every legal lot of record and right-of-way in shoreline jurisdiction. The GIS data included information collected specifically for this effort, developed during preparation of the 2013 Stevenson Comprehensive Plan, and maintained by the Skamania County Assessor's Office for their operations.

5.1 Land Ownership

Ownership trends are markedly different between the areas within Stevenson's existing city limits and the urban expansion area (i.e., predesignated) considered in this report. Within the City's jurisdiction, ownership is split, with 53.9% private and 46.1% public. However, in the urban expansion area, private ownership increases to 70.0%. Skamania County—holding 22.1% of all shoreline areas considered in this report—is the single largest public shorelines landowner for both city and county jurisdiction areas. The largest private landholding within the City belongs to the nonprofit Columbia Gorge Interpretive Center, which encompasses approximately 65.4 acres for the museum's grounds and the waters of Rock Cove. The largest private landholding outside city limits is the approximately 70-acre site of the old Co-Ply plywood mill. Map 11 and **Error! Reference source not found.**Table 5.1-1 below present ownership type by jurisdiction within the City's shoreline jurisdiction.

Table 5.1-1 – Existing Ownership by Jurisdiction

Ownership Type	City Jurisdiction		County Jurisdiction (Predesignated)		Combined	
	Acreage	Percent	Acreage	Percent	Acreage	Percent
Cemetery	0.6	0.6%	2.7	2.7%	3.3	1.6%
City	8.7	8.2%	0.0	0.0%	8.7	4.2%
County	28.2	26.8%	16.9	17.1%	45.1	22.1%
Federal	-	-	0.5	0.5%	0.5	0.2%
Port	8.2	7.8%	2.7	2.7%	10.9	5.3%
State	2.9	2.7%	6.8	6.9%	9.7	4.7%
Private	56.9	53.9%	68.9	70.0%	125.8	61.7%
Total	105.5	100%	98.4	100%	204.0	100%

5.2 Land Use and Water Dependency

5.2.1 Future Land Use & Zoning

The existing land uses within the City’s shoreline jurisdiction are dominated by undeveloped lands which make up 33.7% of shoreline jurisdiction. As accounted for in the 2013 Stevenson Comprehensive Plan, the remaining land usage involves public uses—city, county, state, and federal uses—at 26.9%, tourism uses are 15.5%, 12.8% are single-family residential, 6.3% are timber related, 2.6% involve multi-family residential, 1.3% manufacturing, and only 0.8% are other types of commercial uses.

The 2013 Stevenson Comprehensive Plan also projects land usage in the City and urban expansion area, defining 4 broad categories of land use for low and high density/intensity residential and trade uses and an “Urban Reserve” category for lands that should be held for uses those categories but which cannot yet be developed until municipal services are available. These Future Land Use designations act as umbrellas for different categories of zoning districts. Table 5.2-1 provides the summary of these different designations as they apply to the areas reviewed by this report.

5.2.2 Preferred and Water-Dependent Uses

Highest and best utilization of shoreline areas involves accommodating water-oriented uses while discouraging non-water-oriented uses.

Water-oriented uses include varying degrees of reliance on and connection to shorelines of the state.

- “Water-Dependent Use” means a use or portion of a use which cannot exist in a location that is not adjacent to the water and which is dependent on the water by reason of the intrinsic nature of its operations (WAC 173-26-020(39)).
- “Water-Related Use” means a use or portion of a use which is not intrinsically dependent on a waterfront location but whose economic viability is dependent upon a waterfront location because:
 - The use has a functional requirement for a waterfront location such as the arrival or shipment of materials by water or the need for large quantities of water; or

65 **Table 5.2-1 – Future Land Use and Zoning Designations**

Future Land Use Designation	City Jurisdiction		County Jurisdiction (Predesignated)		Combined	
	Acreage	Percent	Acreage	Percent	Acreage	Percent
Low Density Residential	26.7	0.6%	38.3	38.9%	65.0	31.9%
High Density Residential	11.5	8.2%	-	-	11.5	5.7%
Urban Reserve: High Density Residential	0.6	26.8%	-	-	0.6	0.3%
Low Intensity Trade	41.4	0.0	10.5	10.7%	51.9	25.4%
Urban Reserve: Low Intensity Trade	0.2	7.8%	25.0	25.4%	25.2	12.3%
High Intensity Trade	25.2	2.7%	-	-	25.2	12.3%
Urban Reserve: High Intensity Trade	-	-	24.7	25.1%	24.7	12.1%
Total	105.5	100%	98.4	100%	204.0	100%

Zoning Types	City Jurisdiction		County Jurisdiction (Predesignated)		Combined	
	Acreage	Percent	Acreage	Percent	Acreage	Percent
Low Density Residential Districts	30.2	28.6%	-	-	30.2	14.8%
High Density Residential Districts	14.2	13.4%	40.4	41.0%	54.5	26.7%
Public Districts	30.4	28.8%	-	-	30.4	14.9%
Low Intensity Trade Districts	10.5	9.9%	35.9	36.5%	46.4	22.8%
High Intensity Trade Districts	20.3	19.2%	22.1	22.5%	42.4	20.8%
Total	105.5	100%	98.4	100%	204.0	100%

– The use provides a necessary service supportive of the water-dependent uses and the proximity of the use to its customers makes its service less expensive and/or more convenient (WAC 173-26-020(43)).

- 70
- “Water-Enjoyment Use” means a recreational or other use that facilitates public access to the shoreline as a primary characteristic of the use, or a use that provides for recreational use or aesthetic enjoyment of the shoreline for a substantial number of people as a general characteristic of the use and which, through location, design, and operation, ensures the public’s ability to enjoy the physical and aesthetic qualities of the shoreline. In order to qualify as a water-enjoyment use, the use must be open to the public and the shoreline-oriented space within the project must be devoted to the specific aspects of the use that foster shoreline enjoyment (WAC 173-26-020(40)).
- 75

80 “Non-Water-Oriented Uses,” then, are uses that are not water-dependent, water-related, or water-
enjoyment, and might include baseball fields, doctor’s offices, vacuum repair shops, or box factories. Non-
water-oriented uses may be vital contributors to the local economy or provide important services for local
residents, but they are discouraged in shoreline areas because they do not rely on a shoreline location for
their operation.

85 As these definitions apply to Washington’s shorelines, a ferryboat dock would be considered a water-
dependent use, and the ticketing office and/or vehicle waiting areas would be considered water-related. A
dockside restaurant would be considered water-enjoyment, but a gas station for ferried vehicles or a
boardwalk souvenir shop would be a non-water-oriented use. In an industrial scenario, a harbor and
crane transferring raw materials or goods from truck to barge would be considered a water-dependent
use. A grain silo or warehouse storing the goods prior to transshipment would be a water-related use. A
green space providing visual access to the water would be a water-enjoyment use, but a warehouse or
90 factory for goods that are not shipped by water would be a non-water-oriented use.

In a Stevenson-specific scenario, the tour boat pier is considered a water-dependent use. A retail
operation selling or renting sail- or kiteboards is considered water-related, while the windsurfing or
kiteboarding launch site is considered a water-dependent use. A restaurant open to the public with a view
of the water would also be considered water-enjoyment, but a drive-through savings bank, even with a
95 similar view, would be a non-water-oriented use.

Table 5.2-2 – Existing Water-Oriented Uses

Land Areas (Excluding Water)				
Status	Preferred Use	Acreage	% Developed Land	% Developed & Undeveloped Land
	Water-Dependent	1.5	1.1%	0.7%
	Water-Related	0.3	0.3%	0.2%
	Water-Enjoyment	30.3	22.4%	14.9%
Developed Land	Total Water-Oriented	32.1	23.8%	15.8%
	Single-Family	26.1	19.3%	12.8%
	Other Non-Water-Oriented	76.9	56.9%	37.7%
	Total Non-Water-Oriented	103.0	76.2%	50.5%
	Subtotal	135.2	100%	n/a
Undeveloped Land	Subtotal	68.8	n/a	33.7%
All Land	Total	204.0	100%	100%

100 Though preferred under the SMA, water-oriented uses are relatively absent along Stevenson’s shorelines.
The majority of developed lands are not developed with uses preferred by the SMA and 19.3% of
developed lands are used as single-family residences. This leaves only 23.8% of land used for water-
oriented purposes and a shocking 1.1% (1.5 acres) of all developed land in the shoreline jurisdiction
analyzed in this report is dependent on its shoreline location.

5.3 Projected Shoreline Use and Potential Use Conflicts

105 The SMA requires that jurisdictions analyze future demand for shoreline space and ensure that the uses
are consistent with the SMA. The City's shoreline jurisdictional area includes an urban waterfront with
intensive transportation and commercial uses, and so it is required to coordinate with DNR and Port
authorities to ensure consistency with harbor area statutes and regulations as well as with port plans. The
City must also identify measures and strategies to encourage appropriate use of these shoreline areas in
110 accordance with the SMA and the Stevenson comprehensive plan, while also determining allowable uses,
resolving potential use conflicts, and planning for the restoration of ecosystem-wide processes and
shoreline ecological functions over time.

The Planning Director of the City of Stevenson provided information about several shoreline development
opportunities and potential shoreline use conflicts within the City during a June 2, 2015 teleconference
with BergerABAM staff. These development opportunities consider balanced development of industrial,
115 commercial, residential, recreational, and other uses, while also aiming to incorporate solutions for
shoreline protection and the preservation of ecological processes and functions. [Table 5.3-1 – Projected
Shoreline Uses and Potential Conflicts](#)

Waterbody	Reach	Site	Existing Use	Potential Use Change/Conflicts	P O
Columbia River	CR-1 (predesignated)	Stevenson Cemetery	Non Water-Oriented, Cemetery	Limited potential for changes of use. Current use unlikely to conflict with adjacent parcels. Normal maintenance and repair of existing structures not anticipated to conflict with shoreline preferred uses.	P a
	CR-1 (predesignated)	Slaughterhouse Point (small bump-out in center of reach)	Undeveloped	Port has expressed a desire for possible water access/recreational use and/or habitat mitigation site for downtown Port development. Future development unlikely to conflict with adjacent parcels, but may conflict with SMA preference to protect and enhance ecological functions.	P p a c
	CR-1 (predesignated)	Pebble Beach	Water-Dependent/Enjoyment, recreation site	Port has had some discussion about providing improved or additional recreation. Presence of BNSF railroad creates potential use conflicts at this site, and development could conflict with shoreline protection and enhancement goals.	P p in
	CR-2	East Point Launch, Port Industrial Site	Water-Dependent/Related, Non Water-Oriented, recreation site and industrial buildings	Water access at this area is a motorized boat launch and the main kiteboarding site. Port is permitted to restore the Columbia River shoreline in the western part of this site to extend the OHWM ~60' waterward. Use conflicts exist between recreational users and industrial users for parking spaces and traffic operations. A 1995 fatal flaw analysis identified this area for a possible marina. Expansion of existing cidery with restaurant and tasting room has been considered. This would add a preferred Water-Enjoyment use, but present potential conflicts related to parking and industrial traffic operations. Future development of this site could conflict with preference for protecting and enhancing shoreline ecological functions if the Columbia River restoration project is not completed.	P p E e in tr re

Table-5.3-1 Projected Shoreline Uses and Potential Conflicts provides some information on the various shoreline development opportunities and potential conflicts within the City grouped by waterbody and reach. Projected shoreline uses and potential use conflicts are summarized below for all reaches within the City and predesignated areas, with the exceptions of Rock Creek Reach 2 and Ashes Lake, where no development opportunities were identified.

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Table 5.3-1 – Projected Shoreline Uses and Potential Conflicts

Waterbody	Reach	Site	Existing Use	Potential Use Change/Conflicts	Public Access Opportunities
Columbia River	CR-1 (predesignated)	Stevenson Cemetery	Non Water-Oriented, Cemetery	Limited potential for changes of use. Current use unlikely to conflict with adjacent parcels. Normal maintenance and repair of existing structures not anticipated to conflict with shoreline preferred uses.	Publicly-owned, potential for visual access improvements
	CR-1 (predesignated)	Slaughterhouse Point (small bump-out in center of reach)	Undeveloped	Port has expressed a desire for possible water access/recreational use and/or habitat mitigation site for downtown Port development. Future development unlikely to conflict with adjacent parcels, but may conflict with SMA preference to protect and enhance ecological functions.	Publicly-owned, potential water-only access to picnic or camping area
	CR-1 (predesignated)	Pebble Beach	Water-Dependent/Enjoyment, recreation site	Port has had some discussion about providing improved or additional recreation. Presence of BNSF railroad creates potential use conflicts at this site, and development could conflict with shoreline protection and enhancement goals.	Publicly-owned, potential to expand/improve amenities
	CR-2	East Point Launch, Port Industrial Site	Water-Dependent/Related, Non Water-Oriented, recreation site and industrial buildings	Water access at this area is a motorized boat launch and the main kiteboarding site. Port is permitted to restore the Columbia River shoreline in the western part of this site to extend the OHWM ~60' waterward. Use conflicts exist between recreational users and industrial users for parking spaces and traffic operations. A 1995 fatal flaw analysis identified this area for a possible marina. Expansion of existing cidery with restaurant and tasting room has been considered. This would add a preferred Water-Enjoyment use, but present potential conflicts related to parking and industrial traffic operations. Future development of this site could conflict with preference for protecting and enhancing shoreline ecological functions if the Columbia River restoration project is not completed.	Publicly-owned, potential for Water-Enjoyment business expansion, improvement of the trail and addition of recreational amenities

Table 5.3-1, Continued

Waterbody	Reach	Site	Existing Use	Potential Use Change/Conflicts	Public Access Opportunities
Columbia River	CR-2	Narrow, Port-owned outparcels	Water-Enjoyment/Related, Non Water-Oriented	Port has discussed redevelopment of this site and removal of the water-related maintenance building and vacant residence. Restaurant building likely to remain. Port is permitted to restore the Columbia River shoreline adjacent to this site, add a non-motorized physical access point, move the OHWM ~80' south and prevent active erosion which threatens the foundation of the restaurant building. Future development of this site could conflict with preference for protecting and enhancing ecological functions and could limit existing visual access to the shoreline from Cascade Avenue.	Publicly-owned, potential for Water-Oriented business expansion, improvement of the trail and addition of recreational amenities
	CR-2	Stevenson Landing	Water-Dependent/Enjoyment	Site is used as a park. Port would like to redevelop a portion of this for water-oriented businesses, and improve aesthetics of the pier at the landing. This site is the western terminus of the permitted restoration project and will move the OHWM waterward. Teo Park to the west of the landing is unlikely to change use. Conflicts (noise, wind shadow) with adjacent uses exist when tourboats are docked at Stevenson Landing. Future development could conflict with visual access from Cascade Avenue and the SMA preference for protection and enhancement of ecological functions.	Publicly-owned, potential for Water-Oriented business addition, improvement of the trail and addition of recreational amenities
	CR-2	Hotel site (12 units)	Water-Enjoyment	Based on assumed profitability, potential for redevelopment is low. Site is subject to easement for public trail along the shoreline which connects Stevenson Landing to Bob's Beach. Parking conflicts exist and may increase between this site and Bob's Beach.	Privately-owned, potential to improve trail surfacing in public easement

Table 5.3-1, Continued

Waterbody	Reach	Site	Existing Use	Potential Use Change/Conflicts	Public Access Opportunities
Columbia River	CR-2	Bob's Beach, Port Office	Water-Dependent/Related	<p>Site is the main windsurfing location. Change of use is unlikely, but Port has discussed adding amenities to the site, including expanded rigging areas, additional physical access, a bathroom and paved parking. Port has discussed demolishing and rebuilding on the site of an abandoned garage adjacent to a wetland and adding a deck to the office building as potential use for weddings.</p> <p>Parking conflicts exist and may increase between this site and the adjacent hotel. Some wind shadow conflicts are possible when a tourboat is docked at Stevenson Landing. Some conflicts may arise with residential properties west of this site.</p> <p>Future development could conflict with SMA preference for protecting and enhancing shoreline ecological functions.</p>	Publicly-owned, potential for new physical access at western edge of site, improvement and addition of recreational amenities
	CR-2	Residential Properties	Single-Family Residential, undeveloped	<p>Future Land Use and Zoning maps were recently changed to designate these properties as residential. Change in use is unlikely, though development of vacant sites is assumed. Sedimentation at the mouth of Rock Creek is changing the character and may lead to requests for changes of use</p> <p>Use conflicts may occur on the eastern edge of this site and with recreationalists on the water searching for a convenient respite site.</p> <p>Future development may conflict with ecological function preferences of the SMA and public visual access from Cascade Avenue.</p>	Privately-owned, potential to preserve visual access from Cascade Avenue. Unknown potential for physical access may develop based on sedimentation trends near Rock Creek

Table 5.3-1, Continued

Waterbody	Reach	Site	Existing Use	Potential Use Change/Conflicts	Public Access Opportunities
Columbia River	CR-3 (predesignated)	Former industrial sites, including site of former Co-Ply mill	Non Water-Oriented, undeveloped, commercial (upland)	<p>Sites are zoned by county as industrial. Private owners may be interested in annexation if development requires water and/or sewer. Future Land Use map would permit either industrial or commercial City zoning.</p> <p>Potential future uses include industrial development and reestablishment of barge dock for shipment of goods. The western portion of the site contained the fewest barriers for development of a regional marina based on a 1995 study of the Oregon and Washington shorelines of the mid-Columbia River, but current owners have stated development of a marina is unlikely.</p> <p>Site access conflicts may develop with the BNSF railroad, but conflicts with other adjacent uses is unlikely. Future development may conflict with shoreline preferred uses, including protection and enhancement of ecological functions and water-orientation of uses.</p>	Privately-owned, nature and scope of access opportunities will depend on character of future development. Continuous public pedestrian access unlikely if developed for industry, however viewing areas or other forms of access can be incorporated if appropriate (safety concerns exist based on BNSF and if working industrial uses develop)
	RC-1	Trailer Park Site	Water-Dependent (abandoned), Non Water-Oriented	<p>This site involves the greatest likelihood for changes of use from the existing mobile home park (upland area) and abandoned barge dock. Owners have expressed a desire to sell the property for redevelopment. BNSF has expressed a desire to replace the bridge of Rock Creek at the southwestern edge of this site.</p> <p>Noise conflicts may occur between this site and the BNSF and SR 14 corridors, but conflicts with other adjacent uses is unlikely. Future development could conflict with water-orientation and ecological function preferences of the SMA.</p>	Privately-owned, potential for new physical access at abandoned barge dock and pedestrian trail access from/under SR 14 and/or BNSF line depending on current sedimentation trends from Rock Creek
Rock Creek					

Table 5.3-1, Continued

Waterbody	Reach	Site	Existing Use	Potential Use Change/Conflicts	Public Access Opportunities
Rock Creek	RC-1	Lower Rock Creek, east bank	Water-Enjoyment, Non Water-Oriented, undeveloped	<p>Development and change of use is highly likely. The Future Land Use designation of these properties is High Intensity Trade. Commercial development is expected on the undeveloped site. The County-owned site includes a pedestrian bridge over Rock Creek and non-water oriented utility uses which may be redeveloped for commercial purposes. This area also includes Rock Creek Drive bridge, which is scheduled for replacement by the City with a freespanning structure with greater freeboard.</p> <p>This area is subject to uncertainty regarding the location of the OHWM based on dredging and the placement of materials dredged after the 2007 Piper Road Landslide.</p> <p>Use conflicts may occur with neighboring residential properties and between vehicular and pedestrian traffic. Future development could conflict with preferred uses from the SMA, including protection and enhancement of ecological functions and water-orientation of uses.</p>	Publicly- and Privately-owned, opportunities exist to provide continuous pedestrian access along Rock Creek with a potential connection under SR 14. Expanded and new public amenities could be added near the bridges, including improved visual and physical access.
	RC-1	Rock Creek Drive Bridge Area, east bank	Single-Family Residential	<p>Change of use is likely for one abandoned, city-owned home, which could be used for transportation and/or stormwater management purposes, unlikely otherwise. Changes to traffic patterns present the most likely use for this area depending on the location for the replacement of Rock Creek Drive Bridge. Future development may conflict with the SMA preference to protect and enhance shoreline ecological functions.</p>	Publicly- and Privately-owned, opportunities exist to provide additional visual and physical access at city-owned residential
	RC-2 (predesignated)	Piper Road Landslide Area	Undeveloped	<p>Change of use unlikely. Use conflicts may occur based on sedimentation from landslide area or stormwater intrusion into unstable area from uplands.</p>	Publicly- and Privately-owned, limited potential for visual or physical access

Table 5.3- 1, Continued

Waterbody	Reach	Site	Existing Use	Potential Use Change/Conflicts	Public Access Opportunities
Rock Creek	RC-2	Upper Rock Creek Falls	Undeveloped	Low-to-moderate likelihood of land use change. If changes occur, it could generate use conflicts between neighboring residences, the County Transfer Station on uplands, and shoreline preferred uses, especially if an overlook or picnic site is developed at Upper Rock Creek Falls. Site has a Future Land Use Designation as Urban Reserve High Intensity Trade, which would facilitate continued use of the Transfer Station and development of an industrial park adjacent to it.	Publicly- and Privately-owned, opportunities exist to provide public visual access to Upper Rock Creek Falls.
	RC-1 & 2	Upper Rock Creek, both banks	Single-Family Residential, cemetery, undeveloped	Residential subdivision and expanded single-family residential uses are likely. Use conflicts with adjacent properties may develop around the County Transfer Station and Upper Rock Creek Falls. Future development may conflict with the preference for to protect and enhance shoreline ecological functions.	Publicly- and Privately-owned, opportunities exist to provide additional visual and physical access at city right-of-way for Iman Cemetery Road
	RC-1	Angel Heights Conservation Area	Single-Family Residential, Undeveloped	Change of use and use conflicts are unlikely based on conservation covenant. Some development is possible to enhance the undeveloped park property owned by the homeowner's association.	Privately-owned, limited potential private visual access improvement
	RC-1	Food Bank Building	Non Water-Oriented	County has considered selling property for reuse or redevelopment. Use conflicts may occur depending on traffic pattern changes for replacement of Rock Creek Drive bridge.	Publicly-owned, potential for improved physical & visual access
	RC-1	City Wastewater Treatment Plant	Water-Related	Expansion of treatment works expected without change of use. Use conflicts likely based on odors and other aesthetics. Traffic operations for waste hauling may conflict with neighboring Fairgrounds operations. Other repair of existing structures is not anticipated to conflict with shoreline preferred uses	Publicly-owned, potential for new physical access, enhancement of pedestrian amenities and visual access

Table 5.3- 1, Continued

Waterbody	Reach	Site	Existing Use	Potential Use Change/Conflicts	Public Access Opportunities
Rock Cove & Rock Creek	RC-2, Rock Cove	Skamania County Fairgrounds	Water-Dependent/ Enjoyment, Non Water-Oriented	Low likelihood of land use change. Site may possibly accommodate water-oriented shoreline recreational expansion. Use conflicts are limited but may be affected by noises, odors, and traffic from adjacent transportation and utility uses by the City, state, and railroad.	Publicly-owned, opportunities exist to resurface the trail and enhance recreational amenities and non-motorized physical access to the shoreline
		Old Hegewald Mill Site	Undeveloped	County is actively working to sell this property for redevelopment through a possible public-private partnership. Public visioning performed by the County indicated a preference for water-oriented business along with public access improvements. Phase I and II environmental site assessments have been performed and indicate clean-up of contaminants is unnecessary. Use conflicts with adjacent properties are unlikely, but future development may conflict with SMA preferences for to protect and enhance shoreline ecological functions.	Publicly-owned, potential to develop a trail within the existing easement, enhance physical access and develop Water-Oriented businesses with provide additional visual and physical access
Rock Cove		Assisted Living Facility	Non Water-Oriented	Site is unlikely to redevelop. There is an existing easement along the water and the southern edge of the site. The owner identifies construction of a pathway in the easement as conflicting with the safety of the facility's infirm residents. Use conflicts are unlikely and repair of existing structures is not anticipated to conflict with shoreline preferred uses	Publicly-owned, potential to develop a trail within the existing easement and/or enhance visual access on south side of site
		Interpretive Center	Water-Enjoyment, Non Water-Oriented	Site is open to expanding recreational uses on property, including concessionaire for watercraft rentals. Owner is seeking access directly to SR 14. Use conflicts unlikely.	Publicly-owned, potential for improved physical & visual access
Ashes Lake		Ash Lake Road, SR 14	Non Water-Oriented	Use changes and conflicts unlikely.	Publicly-owned, route for Trail of the Gods

6.0 Shoreline Environment Designations

This section is an overview of shoreline environment designations in accordance with Ecology guidelines (WAC 173-26-211). The Ecology guidelines state that master programs must contain a system that classifies shoreline areas into specific designations that take into account existing land use, the biological and physical character of the shoreline, and the goals and aspirations of the community. The shoreline environment designations should be assigned in such a way that existing shoreline ecological functions are protected (i.e., no net loss) with the proposed patterns and intensity of development and should be consistent with policies for restoration of degraded shorelines and the local comprehensive plan. The six shoreline environmental designations developed by Ecology are listed here in order from most restrictive to least restrictive:

- Aquatic;
- Natural;
- Rural conservancy;
- Shoreline residential
- Urban conservancy; and
- High intensity.

These WAC designations are different from what is currently in effect in the City and County. In order to comply with Washington requirements, the City will need to update its shoreline environment designations to be consistent with WAC 173-26-211. The six environment designations are described below.

Aquatic

The purpose of the “aquatic” designation is to protect, restore, and manage the unique characteristics and resources of the areas waterward of the ordinary high-water mark. Uses may include new over-water structures only for water dependent uses, public access, or ecological restoration. The multiple, shared use of over-water facilities should be encouraged in order to reduce the impacts of shoreline development and increase effective use of water resources. All developments and uses on navigable waters or their beds should be located and designed to minimize interference with surface navigation, to consider impacts to public views, and to allow for the safe, unobstructed passage of fish and wildlife, particularly those species dependent on migration. Uses that adversely impact the ecological function of freshwater habitats should not be allowed, except when necessary to achieve the objectives of RCW 90.58.020, and if their impacts are mitigated according to WAC 173-26-201.

Natural

The purpose of the “natural” environment designation is to protect shoreline areas that are intact or minimally degraded and are relatively free of human influence. Only very low intensity uses will be allowed in order to maintain ecological functions and ecosystem-wide processes. The management policies for this designation would restrict any use that would substantially degrade the ecological functions or natural character of the shoreline area such as commercial, industrial, non-water oriented recreation, roads, utility corridors, parking areas, significant vegetation removal, or shoreline modification. The following uses may be allowed if they are consistent with the purpose of this environmental designation:

- Commercial forestry that meets the conditions of the State Forest Practices Act

- Agricultural uses of a very low intensity
- Some single-family residential development with a density and intensity that are limited as necessary to protect ecological functions
- 45 • Scientific, historical, cultural, educational research uses, and low-intensity water-oriented recreational access uses.

Rural Conservancy

50 The purpose of the "rural conservancy" designation is intended for areas outside of cities and their urban growth areas and protects ecological functions, conserves existing natural resources and valuable historic and cultural areas in order to provide for sustained resource use, achieve natural floodplain processes, and provide recreational opportunities. ~~Uses for this environment may include low-impact outdoor recreation, timber harvesting on a sustained-yield basis, aquaculture, low intensity residential development, and other natural resource-based low intensity uses. The following uses may be allowed if they are consistent with the purpose of this environmental designation:~~

- 55 • ~~Low-intensity, water-oriented commercial and industrial uses in areas that are located in the past or at unique sites in rural communities that possess shoreline conditions and services to support the use.~~
- ~~Water-dependent and water-enjoyment recreation facilities that do not deplete the resource over time, such as boating facilities, angling, hunting, wildlife viewing trails, and swimming beaches, provided significant adverse impacts to the shoreline are mitigated.~~
- 60 • ~~Mining and related activities may be an appropriate use within the rural conservancy environment when conducted in a manner consistent with the environment policies and the provisions of WAC 173-26-241 (3)(h), RCW 36.70A.170, and WAC 365-190-070.~~
- 65 • ~~Construction of new structural shoreline stabilization and flood control works where there is a documented need to protect an existing structure or ecological functions and mitigation is applied. This environment designation is not appropriate for locations within cities or urban growth areas.~~

Shoreline Residential

70 The purpose of the "shoreline residential" designation is to accommodate residential development, appurtenant structures, and appropriate public access and recreational uses that are consistent with maintaining ecological functions and ecosystem-wide processes. Local governments may establish two or more different "shoreline residential" environments to accommodate different shoreline densities or conditions. Multi-family and multi-lot residential and recreational developments should provide public access and joint use for community recreational facilities. Access, utilities, and public services should be available and adequate to serve existing needs and/or planned future development. Commercial
75 development should be limited to water-oriented uses.

Urban Conservancy

80 The purpose of the "urban conservancy" designation is to protect and restore ecological functions of open space, floodplain, and other sensitive lands where they exist in urban and developed settings while allowing a variety of compatible uses. Potential uses should preserve the natural character of the area or promote the preservation of open space, floodplain, or sensitive lands directly or over the long term. Uses that result in the restoration of ecological functions should be allowed if the use is otherwise compatible with the purpose of the environment and the setting. Public access and public recreation objectives

should be implemented whenever feasible and significant ecological impacts can be mitigated. Water-oriented uses should be given priority over non-water-oriented uses. For shoreline areas adjacent to commercially navigable waters, water-dependent uses should be given highest priority. Mining and related activities may be an appropriate use within the urban conservancy environment when conducted in a manner consistent with the environment policies and the provisions of WAC 173-26-241 (3)(h), RCW 36.70A.170, and WAC 365-190-070.

High Intensity

The purpose of the "high-intensity" environment is to allow high-intensity water-oriented commercial, transportation, and industrial uses while protecting existing ecological functions and restoring ecological functions in previously degraded areas. First priority should be given to water-dependent uses, while second priority should be given to water-related and water-enjoyment uses. Non-water-oriented uses should not be allowed except as part of mixed-use developments or in limited situations where they do not conflict with or limit opportunities for water-oriented uses or where there is no direct access to the shoreline. Full utilization of existing urban areas should be achieved before further expansion of intensive development is allowed. Consideration should be given to the potential for displacement of non-water-oriented with water-oriented uses when analyzing full utilization of urban waterfronts. Where feasible, visual and physical public access should be required. Aesthetic objectives should be implemented by means such as sign control regulations, appropriate development siting, screening and architectural standards, and maintenance of natural vegetative buffers.

6.1 Recommended Shoreline Environmental Designations

Using the shoreline environment designations defined by the Ecology guidelines (WAC 173-26-211), preliminary shoreline environment designations were developed for each shoreline reach within the City and pre-designated for the two reaches within Skamania County. The City's original shorelines management master program (1973) does not include pre-designated areas and designates only urban, conservancy, and natural shoreline environments.

The preliminary recommendations for reaches in the City are shown in [Table 6.0-1 – Reach Summary and Recommended Shoreline Environment Designations](#)

[Table 6.0-1 – Reach Summary and Recommended Shoreline Environment Designations](#)

In cases where multiple shoreline environment designations are recommended for a given shoreline reach, the table shows specifications for each designation. The recommendations take into account the existing land use(s), the biological and physical characteristics of the shoreline, the existing shoreline environment designations, and the goals and aspirations of the City. The attributes that were considered included the following:

- Existing Land Use: percent land use type by reach
- Future Land Use: percent future land use designation by reach (composite rating based on ICR Chapter 4)
- Zoning: percent zoning type by reach
- Ecological Functions: overall performance by reach
- Existing Shoreline Environment Designation: City of Stevenson, 1973

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In general, water areas were designated as "Aquatic", areas subject to active landslides and conservation covenants as "Natural", residential areas as "shoreline residential," and commercial or industrial use areas as "Urban Conservancy" or "High Intensity". The "Rural Conservancy" shoreline environment designation was avoided as inapplicable within city limits and urban growth areas.

Further consideration and refinement of these preliminary recommendations will be part of the ongoing SMP update process as a draft SMP and maps are prepared, reviewed, and revised as necessary. As part of this iterative process, the City may opt to create one or more locally-tailored SEDs to reflect unique circumstances, as consistent with the SMA and WAC.

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Table 6.0-1 – Reach Summary and Recommended Shoreline Environment Designations

Waterbody	Reach	Factors Used to Recommend Designations				1973 Shoreline Environment Designation	Recommended Shoreline Environment Designations
		Existing Land Use	Future Land Use	Existing Zoning	Ecological Functions		
Columbia River	CR-1 East Urban Area (pre-designated)	Public, Residential	LIT, LDR	CCO	Poor (Very Poor to Good)	Urban	Shoreline Residential (residential areas), Urban Conservancy (all other areas)
	CR-2 Downtown Stevenson	Public, Commercial,	HIT, LIT, HDR	CO, ID, R3	Very Poor (Very Poor to Good)	Urban	High Intensity (CO & ID areas), Shoreline Residential (R3 areas)
	CR-3 West Urban Area (pre-designated)	Public, Commercial, Undeveloped, Resource	LIT, HIT	ID, CR	Very Poor (Very Poor to Poor)	Urban	High Intensity (ID areas), Urban Conservancy (all other areas)
Rock Creek	RC-1 Lower Rock Creek & Upper w/i city	Public, Residential, Undeveloped	LDR, HIT, LIT	PR, SR, R3, CO	Poor (Very Poor to Fair)	Natural, Conservancy, Urban	High Intensity (CO & PR areas), Natural (conservation covenant & hazard areas) Shoreline Residential (all other areas)
	RC-2 Upper Rock Creek w/i county (pre-designated)	Undeveloped, Residential, Public	LDR, HIT	R1	Excellent (Fair to Excellent)	Natural, Conservancy	Natural (Hazard areas), Shoreline Residential (all other areas)
Rock Cove		Commercial, Undeveloped, Public	LIT	PR, CR, SR, R3	Good (Poor to Good)	Urban	High Intensity (CR areas), Shoreline Residential (R3 areas), Natural (islands)
Ashes Lake		Undeveloped, Resource	LIT	CR, ID	Very Poor (Very Poor to Good)	Conservancy	Urban Conservancy
Key:		Future Land Use		Existing Zoning			
		LDR-Low Density Residential	HDR-High Density Residential	SR-Suburban Residential	R1-Single-Family Residential		
		LIT-Low Intensity Trade	HIT-High Intensity Trade	PR-Public Use & Recreation	CCO-Community Commercial		
				CR-Commercial Recreation	CO-Commercial		
				ID-Manufacturing			

7.0 References

To keep this Inventory and Characterization report readable and accessible to broad audiences, the authors avoided providing specific citations within the text unless a passage was quoted or a figure used to illustrate a concept. However, WAC requirements necessitate a complete list of resources used to develop this report. This bibliography provides that list and is organized to correspond with the sections of the report that were informed by each source.

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4.0 Reach Level Characterization

85 The JD White Company, Inc., KPFF Consulting Engineers, and E.D. Hovee & Associates. 1995. *Fatal flaw analysis for watercraft recreation sites*. Prepared for Skamania County. August 1995.

Soliz, Cyndi. 2018. Teleconference with City Planning Director regarding presence of milfoil and other noxious weeds. February, 13, 2018.

90 [United States Soil Conservation Service \(USFS\). 1990. *Soil Survey of Skamania County Area, Washington. In cooperation with Washington State Department of Natural Resources and Washington State University Agriculture Research Center.*](#)

5.3 Projected Shoreline Use and Potential Use Conflicts

Shumaker, Ben. 2015. Teleconference with BergerABAM regarding shoreline uses and trends. June 2, 2015.

95 The JD White Company, Inc., KPFF Consulting Engineers, and E.D. Hovee & Associates. 1995. *Fatal flaw analysis for watercraft recreation sites*. Prepared for Skamania County. August 1995.

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A.0 Glossary of Terms

As used in this report, the words and acronyms below have the meaning given here unless the context clearly dictates otherwise. When words or phrases are not specifically defined below, they shall be interpreted so as to give them the meaning they have in common usage and to give this report its most reasonable interpretation and application.

A.1 Abbreviations and Acronyms

BPA – Bonneville Power Administration

cfs – cubic feet per second

City – City of Stevenson

County – Skamania County

CWA – Clean Water Act

DNR – Washington State Department of Natural Resources

Ecology – Washington State Department of Ecology

EPA – Environmental Protection Agency

ESA – Endangered Species Act

FEMA – Federal Emergency Management Agency

FIRM – Flood Insurance Rate Maps

GMA – Growth Management Act

LWM – Large Woody Material

MS4s – municipal separate storm sewer systems

NMFS – National Marine Fisheries Service

NSA – National Scenic Area

NWI – National Wetland Inventory

NPDES – National Pollutant Discharge Elimination System

OHWM – ordinary high water mark

PCE – primary constituent element

PHS – Priority Habitats and Species

RCW – Revised Code of Washington

SMA – Shoreline Management Act

SMP – Shoreline Management Program

USACE – U.S. Army Corps of Engineers

USFWS – U.S. Fish and Wildlife Service

USGS – U.S. Geological Survey

WAC – Washington Administrative Code

WRIA – Water Resource Inventory Area

A.2 Words and Phrases

Allocthonous Inputs—The organic matter (large woody material, leaf litter, and insects) and nutrients that are imported to the aquatic ecosystem from terrestrial sources.

40 **Cumulative Impact**—The impact on the environment that results from the incremental impact of a development or use of a shoreline area when added to impacts from other past, present, and reasonably foreseeable developments and uses of that shoreline area. For the purposes of Stevenson’s Shoreline Management Program, cumulative impacts do not include impacts from development and uses outside of shoreline jurisdiction.

45 **Lacustrine Wetland**—A wetland or deepwater habitat with all of the following characteristics: 1) situated in a topographic depression or a dammed river channel; 2) lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30% areal coverage; and 3) total area exceeds 8 ha (20 acres). Similar wetland and deepwater habitats totaling less than 8 ha are also included in the Lacustrine System if an active wave-formed or bedrock shoreline feature makes up all or part of the boundary, or if the water depth in the deepest part of the basin exceeds 2 m (6.6 feet) at low water. Lacustrine waters may be tidal or nontidal, but oceanderived salinity is always less than 0.5 ‰. Lacustrine wetlands include Limnetic (deepwater) and Littoral (nearshore) subsystems.

50 **Liquefaction**— A process by which water-saturated sediment temporarily loses strength and acts as a fluid, like when you wiggle your toes in the wet sand near the water at the beach. This effect can be caused by earthquake shaking.

55 **Palustrine Wetland**—All nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 ‰. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 ha (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2 m at low water; and (4) salinity due to ocean-derived salts less than 0.5 ‰.

60 **Shoreline Environment Designation**—Analogous to zoning districts in a conventional zoning ordinance, shoreline environment designations divide shoreline jurisdiction into distinct areas where different sets of allowable use provisions, environmental protection measures, and different development standards apply,

65 **B.0 Interrelated Comprehensive Plan Policies**

As the City's primary advisory planning document, the comprehensive plan serves as an "umbrella plan" for further planning endeavors, including the SMP. This appendix catalogues the statements, policies, objectives, and tactics of the 2013 Stevenson Comprehensive Plan in an effort to ensure that the comprehensive plan and its update provide consistent direction for the use of land within Stevenson. This catalogue includes only
70 direct references to shorelines and waterfronts in Stevenson and should not be taken as a substitute for the full plan or its general policy statements.

B.1 Explanatory Statements

The first two chapters of the comprehensive plan contain the following statements related to the SMP. At the conclusion of the SMP update, some of these statements may need to be amended as anticipated in
75 Recommendation 1-4 of this report.

B.1.1 Chapter 1

Page 1

Vision Statement. "Stevenson is a friendly, welcoming community that values excellent schools and a small town atmosphere. The natural beauty is enjoyed by residents and visitors through a network of recreational
80 opportunities. The strength of Stevenson's economy is built upon high quality infrastructure and a vibrant downtown that provides for resident's daily needs. Stevenson takes advantage of our unique location on the Columbia River by balancing jobs, commerce, housing, and recreation along the waterfront."

Page 3

Cornerstone Principle. "Active Waterfront represents Stevenson's utilization of its waterfront assets. This
85 includes use, restoration, and harmonization of the wide-ranging economic, scenic, recreational, ecological, and residential resource potentials of the Columbia River, Rock Cove, and Rock Creek areas."

B.1.2 Chapter 2

Pages 7-8

Area Plans. "Area Plans include goals and objectives for those areas that are not specifically addressed in
90 detail in the current comprehensive plan. For this reason area plans can also be viewed as 'supplements' to the existing comprehensive plan. With Stevenson's 2013 comprehensive plan, the 1975 Skamania County Shoreline Management [Master] Program is folded into the Comprehensive Plan and will no longer be used as a stand-alone document."

B.2 Goals, Objectives, and Tactics

The third chapter of the comprehensive plan contains the following aspirations and action items related to the SMP. In order to help prioritize actions, each objective highlights which of the plan's four cornerstone principles it advances. All objectives and tactics related to Active Waterfront are listed below. At the conclusion of the SMP update, some of these statements may need to be amended as anticipated in
95 Recommendation 1-4 of this report.

100 ***B.2.1 Goal 1 – Community and Schools***

Page 14

"1.3 - Ensure that the monitoring reports contained in Appendix D are submitted to the Council annually prior to budget adoption."

"1.4 - Develop a high level of coordination among all levels of government"

105 "1.5 - Ensure that the plans and actions related to land use by special districts, County, State, and federal agencies are consistent with the Stevenson Comprehensive Plan."

Page 15

"1.11 - Support the Columbia Gorge Interpretive Center, especially in their educational and children's programming efforts."

110 "1.12 - Develop and enhance cultural opportunities."

"1.12-1 - Facilitate and support development of a bricks-and-mortar performing arts center."

"1.12-2 - Develop a public art plan."

"1.12-3 - Install public art in key locations throughout the City, especially along the Columbia River waterfront."

115 "1.12-4 - Install interpretive signs in key locations through the City, especially highlighting Stevenson's unique relationship with the Columbia River."

Page 16

"1.17 - Provide a clean, visually attractive community."

120 "1.17-1 - Facilitate and support activities to beautify the community, such as a Community Beautification Day."

"1.17-2 - Establish a high enforcement area for nuisances in highly visited areas of the city, such as along Second and First streets, Cascade Avenue, and Rock Creek Drive."

"1.17-3 - Establish strategies to reduce noise and light pollution."

B.2.2 Goal 2 – Urban Development

125 Page 18

"2.2 - Preserve, protect, and enhance the functions and values of ecologically sensitive areas (habitat areas, wetlands) with special consideration given to anadromous fisheries, as required by the Growth Management Act."

130 "2.2-1- Regulate land use within and adjacent to ecologically sensitive areas while allowing for the reasonable use of private property."

"2.2-2 - Consider establishing a funding source to acquire ecologically sensitive areas."

"2.2-3 - Conduct an Urban Area-wide inventory of ecologically sensitive areas."

135 "2.2-4 - Encourage agreements that will preserve ecologically sensitive areas in appropriate proportions consistent with available resources. Provision of such open spaces should not reduce the density which can be achieved on the site."

"2.2-5 - Establish a stream corridor management plan and program."

"2.2-6 - Consider stream corridors for multiple use in conformance with other plans."

"2.2-7 - Regulate the use of fill in stream corridors."

"Maintain stream corridors in a natural state, preserving tree lines and vegetation wherever possible."

140 Page 20

"2.7 - Periodically review and revise the Future Land Use and Zoning maps to accommodate changes in

community needs.”

“2.7-1 - Consider designating areas not served by the public sewer and/or water systems as an “urban reserve” until such systems are made available.”

145 “2.7-2 - Balance the availability of sufficient land for various uses when designating Future Land Use and Zoning districts.”

“2.7-3 - Consider infill potential when designating Future Land Use and Zoning districts, especially with regard to multi-family housing.”

150 “2.7-4 - Consider redesignating lands currently designated for industrial use which are unlikely or undesirable to be developed for such uses.”

“2.7-5 - Consider location and suitability of land for urban uses and established need when designating Future Land Uses and Zoning districts.”

“2.8- Establish policies to review annexation proposals.”

“2.8-1 - Prefer annexation of developed areas abutting the city.”

155 Page 21

“2.9 - Encourage the establishment of a subarea plan and land use regulations within the unincorporated Urban Area.”

“2.9-1 - Encourage maintaining existing forest and farm uses within the unincorporated Urban Area.”

160 “2.9-2 - Discourage development within the unincorporated Urban Area until suitable land within the City has been developed.”

“2.9-3 - Ensure the highest and best use of riverfront properties within the unincorporated Urban Area by protecting them from development and redevelopment until urban utilities and services can be provided.”

“2.13 - Establish standards for urban development that encourages mixtures of land uses and intensities.”

“2.13-1 - Consider establishing incentives and/or special standards for infill projects.”

165 ***B.2.3 Goal 4 – Downtown and Waterfront***

Page 27

“The waterfront is an extension of the downtown core and a place where people live, work, and play.”

170 The Columbia River, Rock Creek, and Rock Cove waterfronts are key components to improving the look and function of downtown Stevenson and are acknowledged here as a Sub-Goal. The availability of land on Stevenson’s Columbia River waterfront is unique within the Gorge where railroads and highways either form barriers to waterfront property access or are the waterfront property owners themselves. The scenic assets of Rock Creek and Rock Cove add additional growth potential for development and redevelopment on their abutting lands. This growth, development, and change can be managed to benefit current and future residents and visitors.

175 The Objectives and Tactics selected to achieve this Goal and Sub-Goal focus on developing Area Plans, improving the appeal of the area through public and private activities, and ensuring the functionality of the area through property infrastructure and uses.”

Page 28

180 “4.2 - Periodically review and revise the downtown commercial area boundary, basing the location, type and amount of commercial activity on community need.”

“4.2-1 - Ensure the commercial area boundary encourages compactness and is pedestrian-oriented.”

Page 29

“4.10 - Provide better connections between downtown and the waterfront.”

"4.10-1 - Consider converting Russell Street into a pedestrian mall between Second and First streets."

185 "4.10-2 - Consider improving sidewalks and street crossings and installing public art and seating areas on Russell Street from downtown to the waterfront."

"4.11 - Consider establishing a Parking and Business Improvement Area to support downtown improvements, such as a rehabilitation grant or loan program for downtown buildings or provision of visitor amenities."

"4A.1 - Support development of improved river access in the Stevenson area."

190 "4A.1-1 - Improve waterfront access and control erosion through coordinated stabilization programs."

Page 30

"4A.2 - Establish a Shorelines Master Program to guide the balanced development of industrial, commercial, residential, recreational, and natural uses."

195 "4A.2-1 - Encourage the use of the riverfront for commercial, residential, recreation, and open space purposes consistent with the Shorelines Management Act."

"4A.2-2 - Protect, enhance, and maintain the natural, scenic, historic, architectural, and recreational qualities along the River."

"4A.2-3 - Support recreational activities on the public lands and waters of the Columbia River, Rock Cove, and Rock Creek."

200 "4A.3 - Manage lands abutting the Columbia River and Rock Creek for the benefit of the community."

"4A.3-1 - Review all proposals for shoreline use for compatibility with the goals and policies of the Skamania County Shoreline Management Master Program."

205 "4A.3-2 - Review development proposals located on or near banks and floodway of the River and creeks to maintain the recreation and open space potential while promoting healthy and visually attractive environments."

"4A.3-3 - Review land use policies to ensure compliance with the Shorelines Management Master Program."

"4A.4 - Reduce impediments to attracting waterfront investors."

"4A.4-1 - Enhance Cascade Avenue as the main waterfront street."

210 "4A.4-2 - Use various marketing techniques to attract waterfront investors, such as a "Come on in, the water's fine" slogan.

Page 31

"4A.5 - Consider repurposing the Tichenor Building for retail and lodging purposes."

"4A.6 - Encourage development of a landscaping plan for the fairgrounds."

215 "4A.7 - Support development of a large waterfront gathering place, such as a [n] amphitheater for community events."

B.2.4 Goal 6 – Tourism

Page 38

"6.3 - Facilitate and encourage Stevenson to become the year-round recreation and tourist destination center of the County and Central Gorge."

220 "6.3-1 - Provide visitor amenities such as long-term parking and restrooms."

"6.3-2 - Facilitate and encourage visitor amenities such as affordable and upscale overnight lodging (campsites, yurts, youth and adult hostels, boutique hotels, etc.), convention centers, a marina, and visitor oriented shops."

225 "6.3-3 - Facilitate and encourage visitor-oriented businesses such as kayak and bike rentals and guided activities."

"6.3-4 - Facilitate and support hospitality training as an economic benefit."

"6.4 - Encourage cross-promotion of visitor-oriented businesses and services."

"6.4-1 - Support establishment of incentive for tour boats that visit Stevenson's visitor attractions such as the Columbia Gorge Interpretive Center."

230 "6.6 - Provide access from the waterfront to other parts of town via safe, attractive, and convenient walkways."

Page 39

"6.8 - Establish a quiet zone at railroad crossings within the city."

B.2.5 Goal 7 – Transportation and Circulation

235 Page 41

"Multi-modal transportation options provide people and goods with safe, efficient, and convenient options."

240 "...Stevenson's existing transportation and circulation system has shifted modes and focuses over its long history. The original plat of Stevenson was a gridiron pattern that enabled easy internal circulation for pedestrian and horse traffic and focused on the Columbia River and Stevenson Landing as the primary mode of external transportation. When the railroad came through town, the focus shifted from the river uphill to where the rail line met dirt streets and boardwalks. As automobile use grew and the city expanded away from its riverside terrace, this gridiron pattern had to be altered to accommodate the steep Gorge slopes, the many creekside canyons and ravines cutting through these slopes, and the existing oddly intersecting logging roads on the then-periphery. With the continued dominance of the automobile, the focus again shifted uphill to the new paved state highway, cul-de-sacs and dead-ends became commonplace methods for dealing with the creekside ravines and canyons, and sidewalks waned in importance."

245 Page 43

"7.6 - Reduce the effects of through traffic in the downtown commercial area while minimizing any negative impact on local businesses."

250 "7.6-1 - Manage road construction projects to minimize construction-related impacts on local businesses."

"7.6-2 - Facilitate and encourage alternative routing and/or usage of Highway 14 by truck traffic."

"7.9 - Establish a quiet zone at railroad crossings within the city."

"7.10 - Facilitate and support rail service for future transportation and commerce needs."

"7.11 - Manage on-street parking to permit the safe and efficient operation of the transportation system."

255 "7.13 - Provide wayfinding signage to aid traveler navigation and guide visitors to Stevenson attractions and amenities, especially east- and west-bound travelers on I-84."

B.2.6 Goal 8 – Utilities and Services

Page 46

"8.3 - Periodically review and revise the capital facilities plan."

260 "8.4 - Identify and correct health and safety hazards within the Stevenson Urban Area."

"8.8 - Base the provision for future public facilities and utilities upon financial cost and adequacy of desired levels of service."

"8.8-1 - Consider providing public facilities and utilities in advance of need."

265 "8.8-2 - Coordinate urban development with private utility agencies to ensure the availability of services when needed."

"8.8-3- Continue to provide water and sewer services within the Urban Area."

B.2.7 Goal 9 – Parks and Recreation

Page 49

270 "As a Gorge town, some of the country's premier hiking, hunting, mountain climbing, fishing, kayaking, and
wind sports surround Stevenson on all sides. Many residents enjoy these activities, and many more visitors
are drawn to the area for these relatively solitary activities. Inside Stevenson, a different, more gregarious
variety of recreational opportunities exists, including festivals, fairs, and organized or pick-up sporting events.
Balancing and connecting these gregarious and solitary varieties of recreation are of special importance to
275 Stevenson. The Objectives and Tactics of this Goal seek to do so by ensuring the facilities we already have are
properly maintained, that new lands, facilities, and funding are available, and that trails or pathways are
developed as part of the park system."

Page 50

"9.2 - Preserve open space and recreational resources."

280 "9.2-1 - Establish cooperative agreements to ensure that recreation and open space lands and facilities will be
provided."

"9.2-2 - Establish cooperative agreements to ensure that recreation and open space lands and facilities will be
provided."

285 "9.2-3 - Encourage private enterprise and intergovernmental agreements that will provide open space for
recreational lands and facilities. Provision of such open spaces should not reduce the density which can be
achieved on the site."

"9.3 - Maintain parks and recreational lands and facilities."

"9.4 - Consider establishing a permanent funding source for the acquisition, development, and maintenance
of park and recreation lands and facilities."

290 "9.5 - Develop a pathways and trails plan to highlight Stevenson's recreational, historical, and commercial
sites."

"9.5-1 - Consider using stream corridors as part of a parkway or greenway concept."

"9.5-2 - Include connections among the parks and trails of the City, its partner agencies, and private entities."

"9.5-3 - Include nature walks, scenic vistas, and connections to forests in the plan."

Page 51

295 "9.6 - Provide pathways and trails that highlight Stevenson's recreational, historical, and commercial sites."

"9.6-1 - Use stream corridors as part of a parkway or greenway concept."

"9.6-2 - Connect the parks and trails of the City, its partner agencies, and private entities."

"9.6-3 - Include nature walks, scenic vistas, and connections to forests in the system of pathways."

300 "9.7 - Develop a balanced system of recreation facilities, lands and programs that meets the recreation needs
of residents and visitors alike."

"9.7-1- Develop small parcels of land resulting from urbanization as mini-parks or landscaped areas."

"9.7-2 - Facilitate and encourage the installation of lights and other improvements at the Hegewald
Skateboard Park."

305 "9.7-3 - Facilitate and support the development of major community recreation facilities for citizens, such as
expanding the pool activity center, providing covered pavilion spaces, developing a youth center, and other
spaces for recreation, physical fitness, and wellness classes."

"9.8 - Promote Stevenson's recreational opportunities through media such as websites, brochures, and

signage.”

”9.9 - Protect Rock Cove to improve habitat, water quality and ambiance.”

310 Page 52

”9.10 - Facilitate and support appropriate development and services for the Rock Creek and Rock Cove lands.”

”9.10-1 - Facilitate and encourage recreational activities in the Rock Creek and Rock Cove area, such as access for small watercraft.”

315 ”9.10-2 - Encourage relocation of the County shops at Rock Creek.”

”9.10.3 - Encourage rehabilitation and/or repurposing of the Grange.”

”9.10-4 - Facilitate and encourage enhancement of Rock Cove’s habitat, water quality, and ambiance.”

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Appendix C Map Portfolio

This appendix includes the following figures:

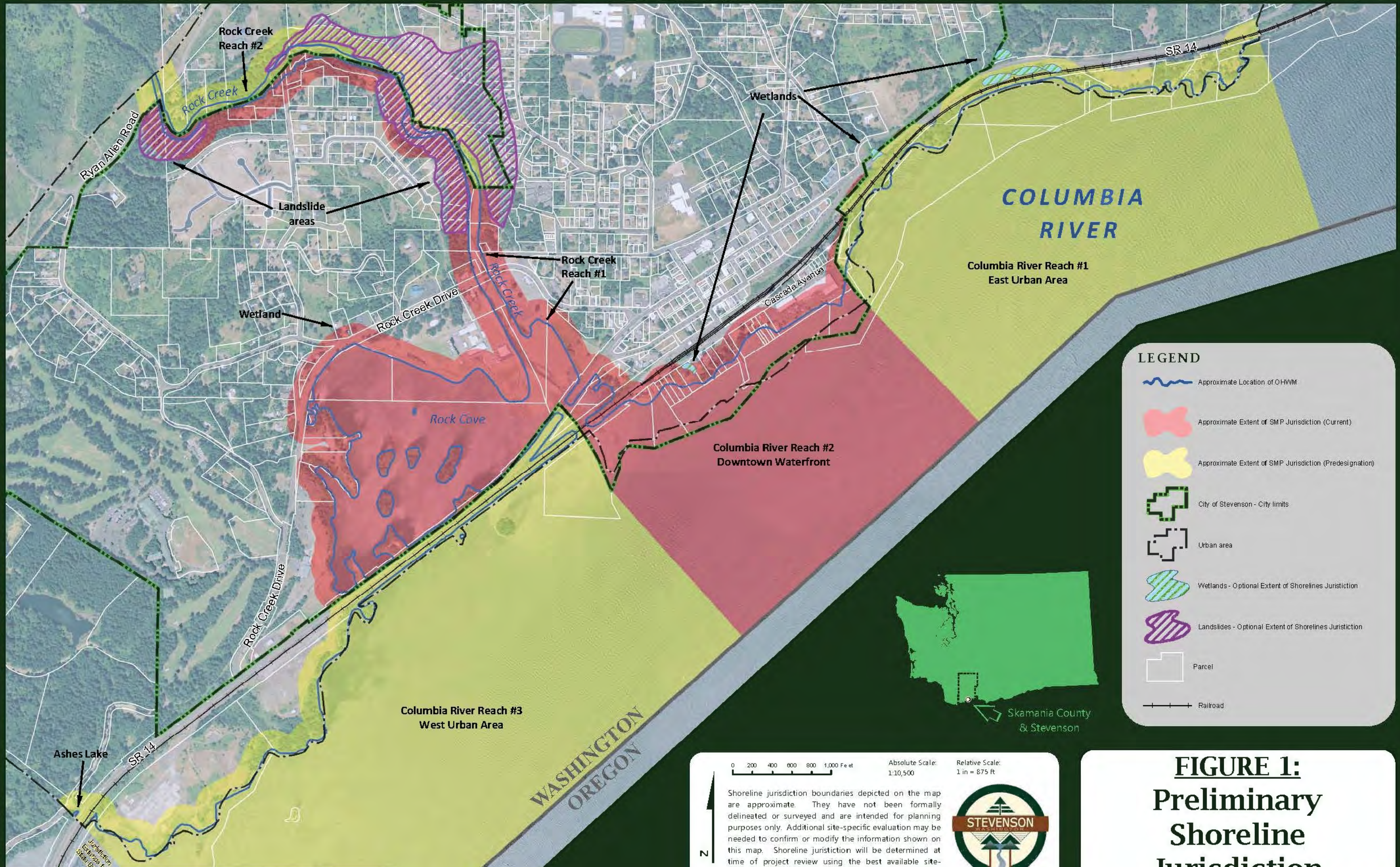
Reach-scale Attribute	Description	Map Number
Preliminary Shoreline Jurisdiction	Approximate extent of SMP jurisdiction (current), approximate extent of SMP jurisdiction (predesignation), approximate extent of landslide hazard areas considered for optional jurisdiction.	1
Physical Environment		
Land Cover	USGS gap analysis program (GAP) data showing forested, shrub-covered, grass-covered, non-vegetated, and water areas. Includes tabular summary of vegetation/land cover.	2
Soil	USGS Soil Survey Geographic Database (SSURGO) and US Forest Service data.	3
Contours	LiDAR-derived 10- and 100-foot contours provided by Skamania County GIS.	4
Liquefaction Hazards	Displays hazard categories for land movement during earthquakes.	5
Geologic Hazards	Stevenson Critical Areas Hazard Map showing potentially unstable slopes, landslide hazard areas, scarps, and unstable soils. Includes memo from PBS Engineering, 2007.	5A
Floodplains	FEMA FIRM, Zone A on Map 530161 A, Panels 01-02 (Red) and Map 530160, Panel 425 (Yellow).	6
Channel Migration Zones	Department of Ecology Map and coarse-scale analysis of likely Channel Migration Zones (CMZs) in Skamania County. Includes memo.	6A
Flowage Easements	Based on County easements records and shows vertical elevation of all flowage easements maintained by the Corps of Engineers for the Bonneville Dam Project.	6B
Biological Resources		
PHS Data	WDFW Priority Habitat and Species (PHS) Wildlife GIS data. Includes species list by reach.	7
Wetlands	USFWS National Wetlands Inventory and Stevenson Critical Areas Wetland Map showing potential wetlands as identified by JD White and Associates in 2007. Includes acreage of wetlands.	8
Land Use & Altered Conditions		
Existing Land Use	County parcel data using Department of Revenue (DOR) codes (derived and categorized from Skamania County Assessor's database).	9
Future Land Use	Map from 2013 Stevenson Comprehensive Plan designating areas for different types of residential and trade uses.	9A
Zoning	Map developed by Skamania County GIS using County and City maps.	10
Archeology/Historic Resources	Washington State Department of Archaeology and Historic Preservation (DAHP), includes publicly available information, excludes sensitive information.	14
Public Access		
Public Ownership	Public land includes all land owned by federal, state, or local government agencies. "Rights-of-way" were not classified as "Public". Areas not covered by parcel dataset (i.e., large portion of the Columbia River) were classified as "Public". Data for length and area in public ownership included and specific recreation areas also noted.	11
Restoration Opportunities		
Impervious Surfaces	County data was used to calculate impervious area (square feet) and linear distance of impervious surface (feet). Includes tabular data for impervious surface types.	12
Rooftops	County data on rooftops within shoreline area and measuring rooftop distance to OHWM. Includes tabular data for building number and size.	13
Shoreline Modifications	Aerial photo-derived data by Skamania County GIS. Includes tabular data on armoring length, island dimensions, and size of docks/piers.	15
Fish Passage Barriers	WDFW Fish Passage and Diversion Screening Inventory Database. Includes reports for identified barriers..	16

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LEGEND

- Approximate Location of OHWM
- Approximate Extent of SMP Jurisdiction (Current)
- Approximate Extent of SMP Jurisdiction (Predesignation)
- City of Stevenson - City limits
- Urban area
- Wetlands - Optional Extent of Shorelines Jurisdiction
- Landslides - Optional Extent of Shorelines Jurisdiction
- Parcel
- Railroad

0 200 400 600 800 1,000 Feet Absolute Scale: 1:10,500 Relative Scale: 1 in = 875 ft

Shoreline jurisdiction boundaries depicted on the map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm or modify the information shown on this map. Shoreline jurisdiction will be determined at time of project review using the best available site-specific information.

**FIGURE 1:
Preliminary
Shoreline
Jurisdiction**



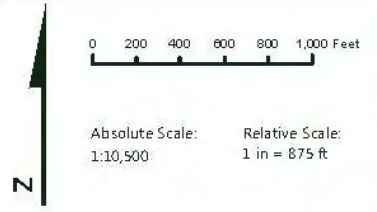
Quantities by type*:

Type	Acres	% of Total
Forest	89.7	43.9%
Shrub	25.0	12.3%
Grass	39.5	19.4%
NonVeg	49.8	24.4%
Total:	204.0	100.0%

* Water area is not included in the above quantities and percentages. The total acreage of water in the preliminary jurisdiction area is 858.2 acres, which is 80.8% of the total area.

Heritage tree note:
A review of WA Natural Heritage Program public GIS data (Feb, 2015) did not indicate the presence of any heritage species in the shoreline jurisdiction area.

COLUMBIA RIVER



Shoreline jurisdiction boundaries depicted on the map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm or modify the information shown on this map. Shoreline jurisdiction will be determined at time of project review using the best available site-specific information.

LEGEND

Landcover Type

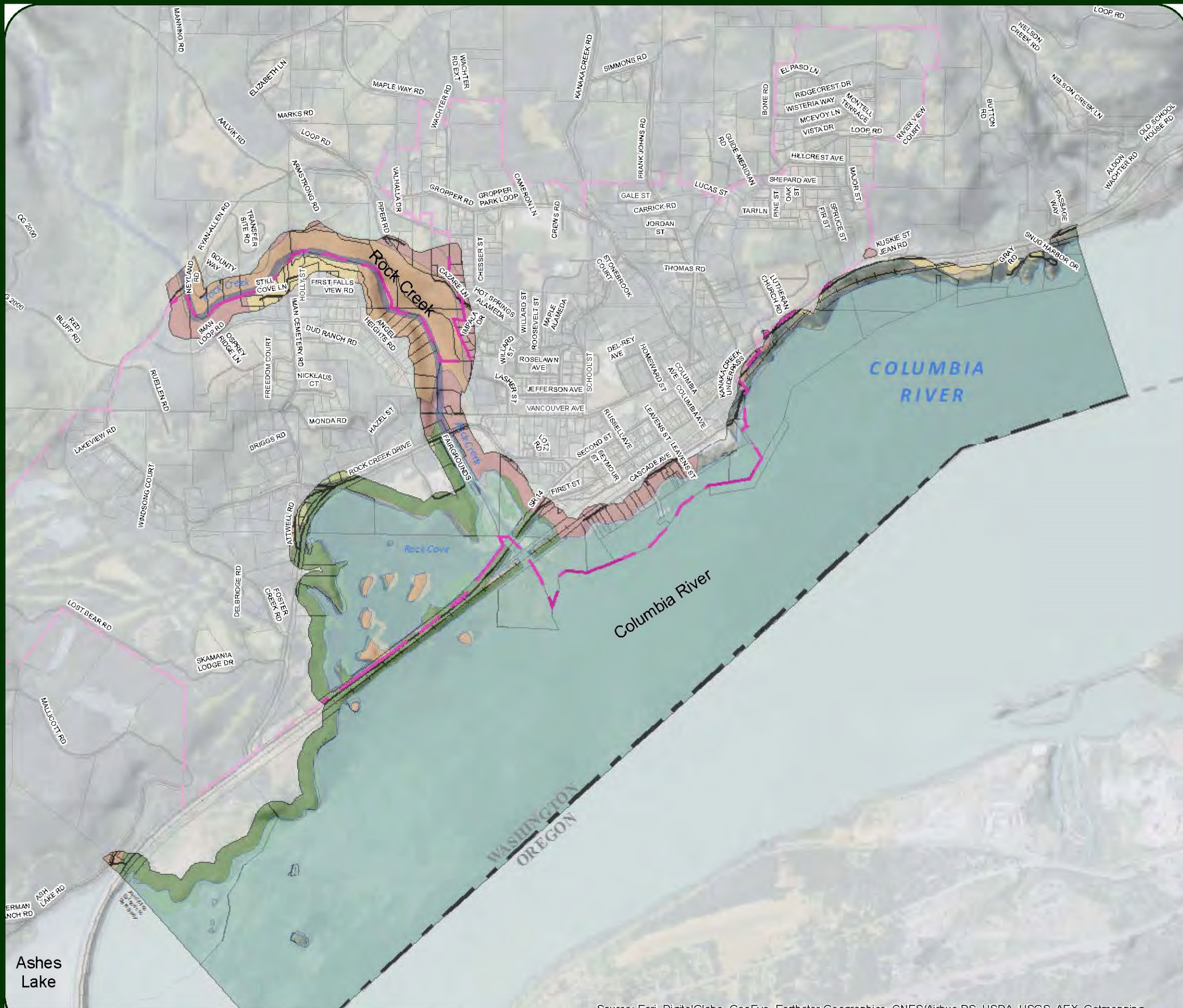
- Forest
- Shrub
- Grass
- NonVeg
- Water

Approximate Location of OHWM

FIGURE 2:

Land Cover

FIGURE 3: Soils



LEGEND

- Stevenson City Limits
- Public Roads
- State Border
- Rail Road
- Parcel

Skamania / Stevenson Soils

- ARENTS
- STEEVER
- BONNEVILLE
- STEVENSON
- SKAMANIA

0 200 400 600 800 1,000 Feet

Absolute Scale: 1:15,000 Relative Scale: 1 inch = 1,250 feet

Shoreline jurisdiction boundaries depicted on the map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm or modify the information shown on this map. Shoreline jurisdiction will be determined at time of project review using the best available site-specific information.



BergerABAM, 6/5/2015



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

FIGURE 4: Contours



LEGEND

- River Miles
- Stevenson City Limits
- State Border
- Parcel
- Rail Road
- Public Roads
- Contours**
- 100 Foot Contours
- 10 Foot Contours

0 200 400 600 800 1,000 Feet

Absolute Scale: 1:15,000
Relative Scale: 1 inch = 1,250 feet

Shoreline jurisdiction boundaries depicted on the map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm or modify the information shown on this map. Shoreline jurisdiction will be determined at time of project review using the best available site-specific information.



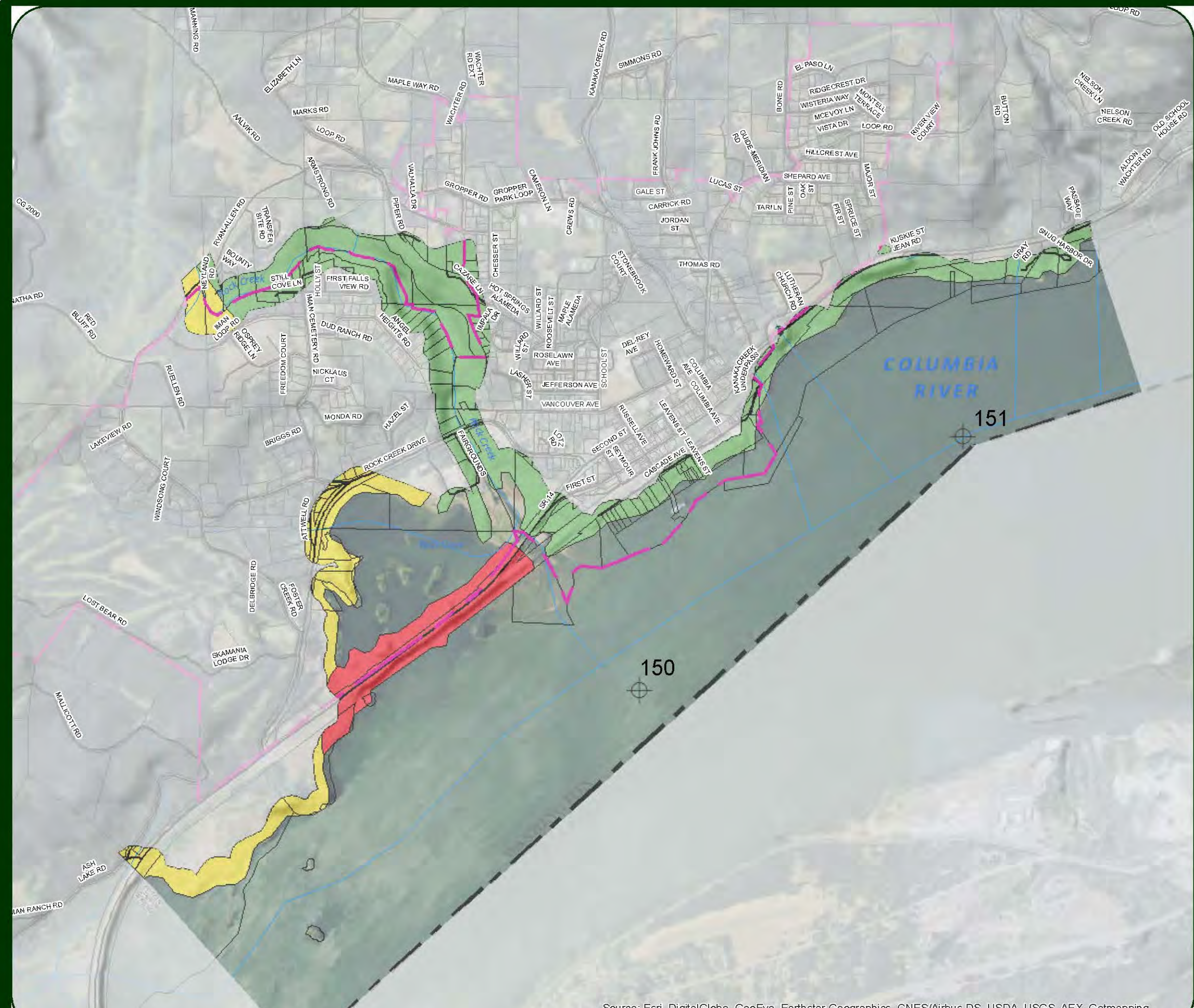
BergerABAM; 8/5/2015



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

FIGURE 5

Liquefaction Hazards



LEGEND

- Stevenson City Limits
- State Border
- Parcel
- River Miles
- Public Roads

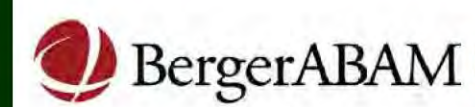
Liquification Potential

- High
- Low to moderate
- Bedrock

0 200 400 600 800 1,000 Feet

Absolute Scale: 1:15,000 Relative Scale: 1 inch = 1,250 feet

Shoreline jurisdiction boundaries depicted on the map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm or modify the information shown on this map. Shoreline jurisdiction will be determined at time of project review using the best available site-specific information.



BergerABAM; 6/5/2015



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Stevenson, Washington

Critical Areas & Geologic Hazards Map



800 400 0 800 Feet
1 inch equals 400 feet

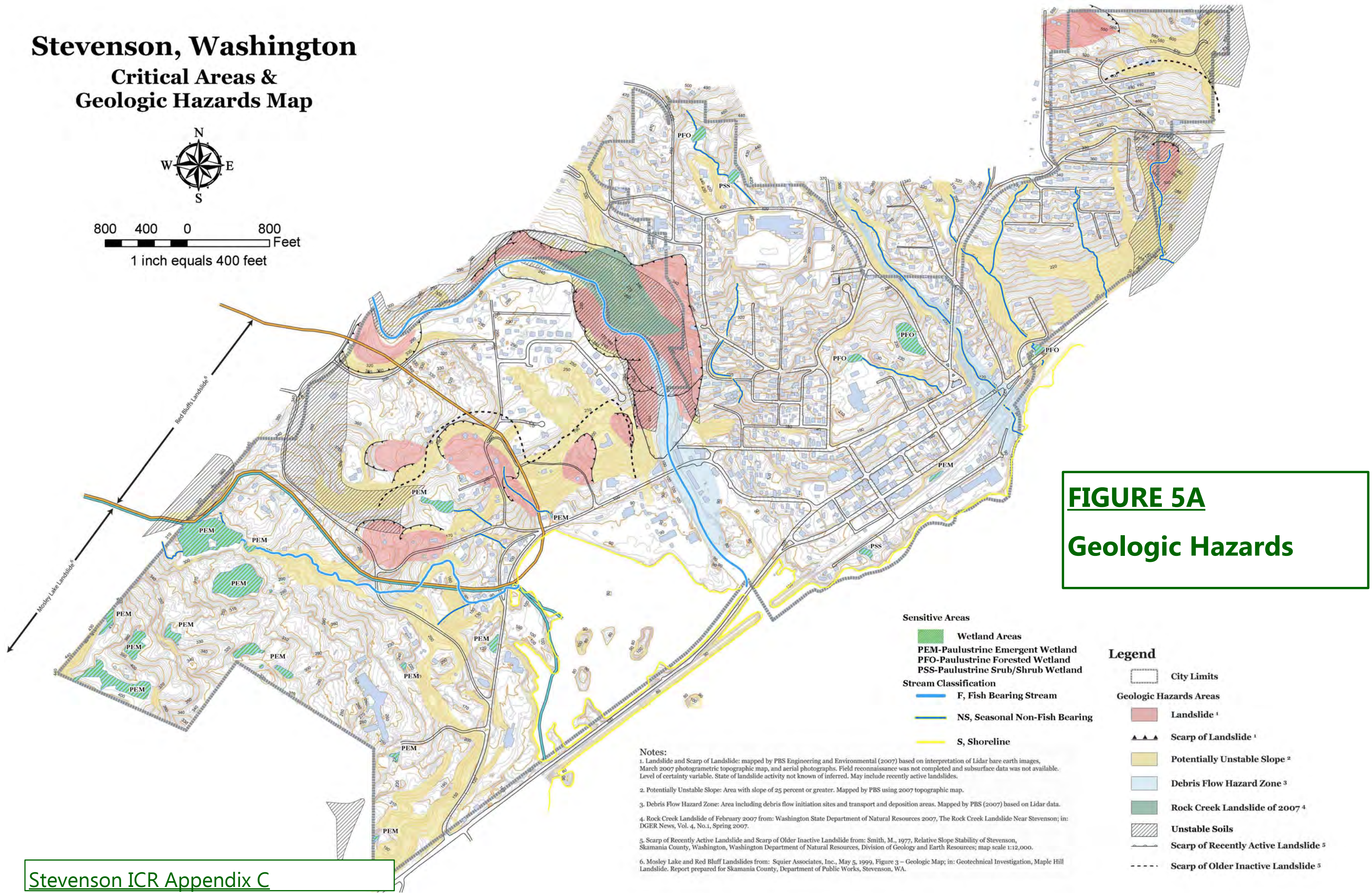


FIGURE 5A
Geologic Hazards

Sensitive Areas

- Wetland Areas
- PEM-Paulustrine Emergent Wetland
- PFO-Paulustrine Forested Wetland
- PSS-Paulustrine Shrub/Shrub Wetland

Stream Classification

- F, Fish Bearing Stream
- NS, Seasonal Non-Fish Bearing
- S, Shoreline

Legend

- City Limits
- Geologic Hazards Areas**
- Landslide ¹
- ▲▲▲ Scarp of Landslide ¹
- Potentially Unstable Slope ²
- Debris Flow Hazard Zone ³
- Rock Creek Landslide of 2007 ⁴
- Unstable Soils
- Scarp of Recently Active Landslide ⁵
- Scarp of Older Inactive Landslide ⁵

Notes:

1. Landslide and Scarp of Landslide: mapped by PBS Engineering and Environmental (2007) based on interpretation of Lidar bare earth images, March 2007 photogrammetric topographic map, and aerial photographs. Field reconnaissance was not completed and subsurface data was not available. Level of certainty variable. State of landslide activity not known or inferred. May include recently active landslides.
2. Potentially Unstable Slope: Area with slope of 25 percent or greater. Mapped by PBS using 2007 topographic map.
3. Debris Flow Hazard Zone: Area including debris flow initiation sites and transport and deposition areas. Mapped by PBS (2007) based on Lidar data.
4. Rock Creek Landslide of February 2007 from: Washington State Department of Natural Resources 2007, The Rock Creek Landslide Near Stevenson; in: DGER News, Vol. 4, No.1, Spring 2007.
5. Scarp of Recently Active Landslide and Scarp of Older Inactive Landslide from: Smith, M., 1977, Relative Slope Stability of Stevenson, Skamania County, Washington, Washington Department of Natural Resources, Division of Geology and Earth Resources; map scale 1:12,000.
6. Mosley Lake and Red Bluff Landslides from: Squier Associates, Inc., May 5, 1999, Figure 3 – Geologic Map; in: Geotechnical Investigation, Maple Hill Landslide. Report prepared for Skamania County, Department of Public Works, Stevenson, WA.



MEMORANDUM

DATE: August 13, 2007

TO: Mr. Dan Cary
Natural Resources Team Leader
J.D. White, Division of BERGER/ABAM Engineers Inc.
1111 Main Street, Suite 300
Vancouver, Washington 98660

FROM: John Jenkins and Rick Thrall

PROJECT NO: 72390.001

RE: Landslide Hazard Mapping for Geologic Hazards Area portion of City of Stevenson CAO

INTRODUCTION

PBS Engineering and Environmental (PBS) is contributing the Geologic Hazard Areas section to the draft Critical Areas Ordinance (CAO) for the City of Stevenson. We prepared this Technical Memorandum to explain and document the methods we used to prepare the landslide hazards map that is referenced in the ordinance. The map shows known or suspected landslides and potentially unstable ground that is at higher risk of slope failure if disturbed during development activities. The intent of the landslide hazard map is to facilitate implementation of the Critical Areas Ordinance by the City of Stevenson as part of their land use decision process.

Our scope of work addresses landslide hazards only. We have not specifically addressed other geologic hazards typically covered in CAO's such as seismic hazard areas; mine hazard areas; volcanic hazard areas; and erosion hazard areas. We note that the geologic hazards section in the existing CAO indicates that mine hazard and volcanic hazard areas are not applicable within the city. We concur with that typical volcanic hazards (lahars) are not a risk in the city but do not have specific knowledge of whether mine hazard areas exist. We propose to utilize the existing CAO to address erosion hazards, seismic hazards as well as the volcanic and mine hazards.

In order to generate the landslide hazard map for the ordinance we first completed a more detailed map showing our landslide hazard mapping as well as previous landslide and landslide hazard mapping by others. This map is included as Attachment 1. As explained herein our mapping is based chiefly on interpretation of Light Detection and Ranging (LIDAR) images we generated from the LIDAR data supplied by J.D. White. This map also shows the landslide related information we transposed from the hazard map prepared by the Washington Department of Natural Resources¹ (DNR) that is referenced in the current CAO. In addition the map shows the limit of the recent Rock Creek Slide as mapped by the DNR² and the limits of two ancient landslides in the southwestern area of Stevenson taken from the geologic map contained in a report of the Maple Hill/Kanaka Creek Landslide by another consulting firm³.

¹ Smith, M., 1977, Relative Slope Stability of Stevenson, Skamania County, Washington, Washington Department of Natural Resources, Division of Geology and Earth Resources; map scale 1:12,000.

² Washington State Department of Natural Resources, 2007, The Rock Creek Landslide Near Stevenson; in: DGER News, Vol. 4, No.1, Spring 2007.

³ Squier Associates, Inc., May 5, 1999, Figure 3 - Geologic Map; in: Geotechnical Investigation, Maple Hill Landslide. Report prepared for Skamania County, Department of Public Works, Stevenson, WA.

Although our landslide hazard map is a significant contribution and an improvement to the map currently used by the City, the level of certainty is relatively lower than is typical for this type of effort. This is mainly because ground-based confirmation of interpreted landslides was not possible due to the scope and budget of the project.

However, this memorandum includes recommendations to improve the map and ordinance for future updates. Further, due to budget constraints, no subsurface boring information was made available to us and thus was not incorporated as part of this effort.

LANDSLIDE AND LANDSLIDE HAZARD DEFINITIONS

Landslide Definition and Types in the Stevenson Area

Landslide is a general term covering a wide variety of mass movement landforms and processes involving the downslope transport of soil and rock material en masse. The downslope movement of geologic materials may be triggered by a number of natural factors including intense rainfall, rapid snowmelt, water level changes, wave or stream erosion, earthquake shaking, and volcanic eruptions. Human actions such as the rerouting or concentration of water on a slope, placement of nonengineered fill material on the head of a slope, and cutting into the toe of a slope can all increase the likelihood future landslide activity.

Landslides are broadly characterized as deep-seated or shallow. Deep-seated landslides fail below the rooting depth of vegetation within or below colluvial materials and into stable, in-place sediments or bedrock. They are often large in extent, complex, and once reactivated, by either natural causes or land management practices, are expensive and difficult to mitigate. In many cases mitigation of deep-seated landslides may not be financially possible. Because deep-seated landslides typically move relatively slow the threat of injury or death to humans is normally low. Several terms have been applied to the types of deep-seated landslides based upon their mechanism of failure and type of materials and include: earth and rock falls, topples, slides, and flows (see for example Varnes and Cruden, 1996⁴).

Shallow landslides typically have a shallower depth of failure within the soil and/or colluvium layer above bedrock. These are generally smaller in size than deep-seated landslides but may also be large in surface area. Shallow landslides include debris flows, shallow slumps, and soil creep. Initiation sites of debris flows are at the heads or on the side slopes of creeks and river valleys. Debris flows are commonly caused by the buildup of pore water pressures in the soil mantle during periods of heavy rainfall or rapid snowmelt whereby the water saturated materials partially or fully liquefy, fail and move downslope typically into a confined stream channel or swale. Debris flows typically bulk up, increasing in size during transport as sediments in the pathway are entrained. Deposition of the materials occur when the velocity decreases at the outlet where the channel becomes unconfined and the gradient decreases. The risk is to structures, roads, and people within the pathway or deposition area. There is evidence of shallow, debris flow failures at the heads and side slopes of smaller drainages as well as the larger creeks (Rock Creek and Kanaka Creek). We recommend that a detailed evaluation of the debris flow hazards be completed to better quantify the risk levels.

Soil creep is a slow process that is normally limited to the topsoil zone. Creep is typically a facilities hazard and if recognized in advance, can usually be mitigated during development.

⁴ Varnes, D.J. and D.M Cruden, 1996, Landslide Types and Processes, in: Turner, A.K; Schuster, R.L., editors, Landslides - Investigation and Mitigation: National Academy Press, Transportation Research Board Special Report 247, p.36-75.

Landslide Hazards

It must be emphasized that the City of Stevenson region is characterized as a landslide prone area with widespread and commonly large landslides that may be ancient or historically active as well as steep slopes at risk to failure and referred to as "potentially unstable". The landslides include both deep-seated and shallow, rapidly moving landslides (debris flows). The most recent landslide occurred in Rock Creek this year and resulted in condemnation of a home and significant deposition of sediment at the creek outlet that had to be dredged. For example the southwestern corner of the City overlies the lower portion and toe of two very large ancient landslides that are part of an even larger landslide complex known as the Bonneville slide. A portion of the Kanaka Creek Landslide termed the Maple Hill slide with the toe being about one-mile north of the city limit was reactivated during the large storms in 1996 resulting in significant damage to homes and roads from deep-seated slides and debris flows. Numerous debris flows were triggered by the 1996 rains that affected Highway 14 in the region⁵.

Landslides pose a threat to the health and safety of citizens and infrastructure when incompatible development is sited in areas of significant hazard. Because Stevenson includes significant landslide prone areas it is incumbent upon the City to recognize and control development of those hazards. A good hazard map and ordinance can achieve that purpose. The ordinance establishes a framework to facilitate sound land use decisions in hazardous areas that is largely based on 1) avoidance of landslides (no building), 2) setbacks from landslides, or 3) mitigation of landslide risk through adequate site investigations and engineering.

SOURCES OF INFORMATION AND METHODS

In accordance with our proposal, PBS utilized information provided to us by J.D. White that we understand was obtained from the City. Additionally PBS utilized readily available published geologic and landslide hazards maps for the Stevenson area. Each of these sources of information are discussed in the following subsections:

Geologic Mapping and Summary of Geologic Conditions

Our research indicates that only regional-scale published geologic mapping is currently available for the Stevenson area. The most useful map we found is contained in the previously referenced consultants report (Squier Associates, 1999) containing the results of investigations of the Maple Hill Landslide as prepared for Skamania County (PBS had a copy of this report as a result of work completed for property within the landslide). The geologic map indicates it is based on the regional geologic map by Hammond (1980)⁶; however we did not review the Hammond map. The Squier Associates map indicates two Tertiary-aged bedrock geologic units and two Quaternary-aged units in Stevenson. The bedrock units are the Ohanapecosh formation and the overlying (younger) Eagle Creek Formation. Quaternary units are the Mosley Lake and Red Bluff landslides, mapped in the southwestern portion of Stevenson, and "debris flow deposits" from the Kanaka Creek Landslide and located along Kanaka Creek. The Ohanapecosh formation covers the eastern third of the city and is mapped in the area to the east of Frank Johns Road. The Eagle Creek Formation is mapped in the adjacent area to the west up to the boundary with the Red Bluff and Mosley Lake landslides extending past the city limits on the west side. This area excludes area of debris flows proximal to Kanaka Creek.

The Ohanapecosh Formation formed in the ancient western Cascades volcanic province and it generally consists of bedded mudstone, siltstone, sandstone, and conglomerate with significant volcanic components and andesite lava flows. The overlying Eagle Creek Formation consists of a series of ancient debris flow deposits and fluvial

⁵ Harp, L.E. and others, undated, Landslides and Landslide Hazards in Washington State Due to February 5-9, 1996 Storm, U.S. Geological Survey Administrative Report.

⁶ Hammond, P.E., 1980, Reconnaissance geologic map and cross sections of southern Washington Cascade Range; Department of Earth Sciences, Portland State University, Portland, Oregon, 31 p., 2 sheets.

sediments composed of volcanic conglomerates, sandstones, and tuffs. An angular unconformity separates the units. The Eagle Creek Formation is locally overlain by Middle Miocene-age basalt lava flows of the Columbia River Basalt Group. These rock units are south dipping towards the Columbia River, contain weak, clay rich layers, and are generally prone to landslides. The Kanaka Creek landslide occurs in these geologic units. According to the Squier Associates report, the Maple Hill Landslide is the southwestern portion of the Kanaka Creek landslide that was reactivated in 1996 as a result of the high rainfall and snowmelt in February 1996. The Maple Hill landslide is characterized by deep-seated movements as well as debris flows that originated on steep slump scarps and flowed downslope causing damage to Loop Road.

We transposed the limits of the Mosley Lake and Red Bluffs landslides from the Squier Associates map to our map (Attachment 1). As noted below, landslide topography is clearly indicated by the LIDAR data for this area. The head scarps of these large, complex landslides coincide with the high cliffs and bluffs to the northwest. These landslides involve the Ohanapecosh and Eagle Creek Formations as well as the younger Columbia River Basalt Group lava flows and other units. It is widely interpreted that these landslides were triggered as a result of rapid drawdown (water level change) associated with the Late Pleistocene glacial outburst floods (also known as the "Missoula Floods") that flowed through the Columbia River about 12,000 years ago. The Skamania Lodge property is entirely located on these landslides. The Bonneville Dam is also located on the landslide complex that is sometimes referred to as the Bonneville Landslide.

Reactivated portions of the landslides within the Columbia River Gorge are known and represent a continued risk to major facilities, particularly transportation routes. The margins of ancient landslides are typically at higher risk for renewed activity. We assume that geotechnical investigations were completed for the Skamania Lodge development addressed mitigation of landslide risks however we did not receive copies of those reports. Additionally, the U.S. Corps of Engineers, possibly the Washington State Department of Transportation and the railroad owner have undertaken studies of landslides with regard to their facilities. Those reports could provide useful information but were not available for this project.

Steep Slopes and Slide Areas, Stevenson Washington (City ID # PL 505 D)

PBS received a copy of the map that is referred to in the existing Stevenson CAO. This map is from the previously referenced 1977 published map by Mackey Smith of the DNR. Accompanying explanatory text for this publication, if it exists, was not received. This large-scale map shows the following categories of geologic hazards:

- "Slopes generally greater than 15 percent. May become unstable if existing land use is modified".
- "Unstable areas: displays recently active landsliding"
- "Scarps of older currently inactive landslides"
- "Scarps of recently active landslides"

These features include areas that extend outside of the current city limits to the north and east. We note however that this map did not identify the area of the Mosley Lake or Red Bluffs landslides.

PBS transposed the scarps and the "unstable areas" from the 1977 map to the map in Attachment 1. The "scarps of recently active landslides" and "unstable areas" is limited to the Rock Creek area. The Rock Creek area is high risk area for future slope failures and debris flows in which a large portion failed in February of this year. Landslide features are clearly evident from LIDAR data and the limit of the 2007 failure was delineated by DNR in the referenced 2007 publication.

The "scarps of older currently inactive landslides" shown on the 1977 map does not indicate the extent of landslide masses that occur downslope of the scarps. Landslide features from LIDAR data are associated with the scarp in the area centered on Iman Cemetery Road between Ryan Allen Road and Loop Road in the southwest part of the city. However, landslide features are not clearly evident below the scarp shown in the developed area in the northeast corner of Stevenson east of Bone road and south of El Paso Lane. The only other scarp feature within the City Limits on the 1977 map occurs nearby to the northwest. Our LIDAR mapping indicates a landslide scarp at that location.

Geotechnical Reports

PBS received a limited number of geotechnical reports (three) that we reviewed. However, none of these reports included subsurface explorations. Thus interpretations of geology, landslides, and slope stability were based on reconnaissance combined with literature review and aerial photo analysis in one of the reports. Two reports pertained to a recent developments south and east of Iman Loop Road one of which is bordered by Rock Creek on the northeast side. Landslides were recognized on the steep slopes bordering Rock Creek and setbacks were recommended. According to geographic information systems (GIS) data showing the location of homes, one of the new homes is located less than 50 feet from the top of the slope break. Fresh slumps on the slope and the recent 2007 failure adjacent to the steep slopes on the other side of the creek indicate that the 50-foot setback is inadequate without further stabilization.

Another report is for property located within the area east of Iman Cemetery Road below the 1977-mapped scarp mentioned above. That report included review of aerial photographs that identified landslide features in the area. It included recommendations for subsurface explorations.

A higher level of certainty regarding evaluation of landslide conditions and slope stability are from geotechnical investigations that include subsurface explorations (test pits, borings, borings instrumented with piezometers and inclinometers, laboratory testing, and slope stability modeling) as well as detailed mapping. We suspect that other geotechnical reports with this type of information exist however we did not receive any. We are particularly interested in geotechnical reports associated with the Skamania Lodge development because it occurs on the large ancient landslide complex that may be unstable.

Light Detection and Ranging (LIDAR) Data, Topographic Map and Aerial Photograph

Our landslide hazard mapping relied heavily on digital elevation models (DEM) derived from LIDAR data we received for this project along with the recent (2007) topographic map and aerial photograph. According to a representative of Minister & Glaeser Surveying, the topographic map was derived from traditional photogrammetric methods using ortho-rectified aerial photos flown in March 2007; a two-foot contour interval is used. We understand that the LIDAR data was obtained from Washington DNR and was flown in February – March 2005. In addition, J.D. White provided GIS information showing roads and buildings. This data was used to delineate apparent landslides, debris flow hazard zones, and steeper slopes (equal to or greater than 25 percent) at generally greater risk for slope movements.

DEMs created from LIDAR is a powerful method used to evaluate landslide hazards as it provides a much more accurate representation of the ground surface in forested areas than is possible by photogrammetric methods. For this project we utilized shaded relief maps/images at a scale of 1 inch = 500 feet with two different virtual sunlight orientations. In particular we utilized a constant sun angle of 45 degrees with sun azimuths (direction) of 45 and 315 degrees. The shaded relief maps were analyzed alone and with the topography, roads and buildings superimposed. Additionally we evaluated the topographic map combined with the aerial photograph.

The LIDAR shaded relief images and images combined with the topographic map accurately depict the ground surface and allow overall interpretation of landforms associated with landslides. Landslide related landforms that were observed include scarps, hummocky (irregular) topography, disrupted drainages, and fan deposits associated with debris flows. The images also allow significant fill areas to be recognized. Typically when landslide mapping is performed using LIDAR DEMS, or other methods such as traditional topographic maps or aerial photographs, field reconnaissance of selected features is conducted to evaluate the general age of the landslide. State of activity can be evaluated based on geomorphology.

In order to improve the accuracy of the attached landslide hazard map by PBS, site reconnaissance of the suspected landslides is recommended as well as review of geotechnical reports that include subsurface explorations (if available). Because our scope of work did not include reconnaissance to evaluate the apparent landslide features, the level of certainty of some of the less obvious mapped landslide features is low. During reconnaissance, the age and state of activity should be estimated based on where features associated with active movement are present (e.g. sharp appearing scarps, ground cracks, leaning or pistol butted trees) or whether the landslide features are subdued due to erosion and possible inactive. A commonly used classification of the age and activity of landslides based on geomorphology indicators includes the following categories (Varnes and Cruden, 1996): 1) Active, reactivated, suspended; 2) Dormant – young; 3) Dormant – mature; 4) Dormant – old or relict. Old landslides are often termed ancient that formed hundreds to thousands of years ago. In some cases these ancient landslides are judged to be inactive and stable. However, ancient landslides or portions of large ancient landslide complexes may be reactivated and periodic movement may have occurred for very long periods of time.

The landslide hazards map shows areas where the slope is 25 percent or higher (4H:1V or 14 degrees delineated as a potentially unstable slope in Attachment 1). Steep sloped areas typically include the scarp areas and side slopes to drainage ways.

LANDSLIDE HAZARD MAPPING BY AREA

The following subsections comment on our results by area within the City of Stevenson:

Northeastern Stevenson:

This area encompasses the northeastern portion of Stevenson extending from the north city limits down to the Columbia River on the south. We delineated two landslides and scarps in this area based on LIDAR. The northern-most landslide extends outside of the city limits in an undeveloped area. As shown on Attachment 1, the northern portion includes a landslide head scarp mapped by the Department of Natural Resources (DNR) in 1977 and is designated as "scarps of older inactive landslides". The LIDAR images are inconclusive with respect to features associated with a landslide below the 1977 mapped scarp although it is possible this is a landslide. Other steeper slope areas are delineated in the northern and southern portions of the area including a south-trending drainage way and undeveloped area above the Columbia River.

Rock Creek:

Rock Creek has cut a steep sided canyon through the north-central portion of Stevenson. This area includes "scarps of recently active landslides" and "unstable areas with recently active landslides" mapped by DNR in 1977. That area approximately coincides with landslides and steep slopes we mapped using LIDAR images. The limit of the large landslide that occurred in February 2007 is also shown and is based on the limit shown in the previously referenced DNR paper publication from this year. The LIDAR images clearly show landslide scarps and associated landforms which appear sharp (and thus recent or youthful) indicating that this is a high-risk area for future landslide activity. The Rock Creek area is also subject to debris flows originating from slumps into the creek that are then transported downstream.

Central Stevenson:

Two areas west of Rock Creek in central Stevenson contain landslides based on LIDAR as well as delineated steep slopes. The southeastern slide was also mapped by DNR in 1977. This area appears to be prone to landslides and debris flows that originate from the head and sidewalls of the surface water drainages. Aerial photo analysis (performed for one of the geotechnical reports we reviewed) similarly interpreted landslides in this area.

Southwestern Stevenson (Red Bluff and Mosley Lake Landslides):

The southwestern Stevenson area is defined by the approximate limit of the Red Bluff and Mosley Lake Landslides, taken from the referenced geologic map in the Squier Associates report, as shown on Attachment 1. The Red Bluff Landslide that comprises the northeastern portion of this area includes individual landslides that are interpreted from LIDAR images as well as adjacent steep slopes. This area also includes a scarp identified by DNR as "scarps of older currently inactive landslides".

The LIDAR images for the area to the southwest (that coincides with the Mosley Lake landslide and includes the Skamania Lodge Resort and golf course property) clearly show landforms characteristic of a large landslide complex. Local areas with steep slopes are delineated.

CONCLUSIONS AND RECOMMENDATIONS

The Landslide Hazard Map is based on the information compiled in the Attachment 1 map and is thus largely based on interpretation of slope hazards from LIDAR images in combination with previous hazard mapping. In order to improve the accuracy of the mapping, site reconnaissance of the mapped landslide features, steep slopes and geologic conditions is strongly recommended. Additionally review of geotechnical reports from the Skamania Lodge development and other developments that include subsurface explorations, should be completed. This could be done for future updates of the geologic hazard map. It is possible that landslide features exist that could become evident with field reconnaissance or further study.

On the basis of the available information used for this report and our professional judgment we have characterized the risk of the identified areas as follows:

HIGH HAZARD:

Rock Creek area. – Landslides and Debris Flows
Delineated Landslides

MEDIUM HAZARD:

Mosley Lake and Red Bluff Landslides
Steep slopes
Debris flows

LOW HAZARD:







None

The draft ordinance includes requirements for detailed geotechnical investigations for these areas.

Attachment 1: Landslide Hazards Map


FIGURE 6: Floodplain

LEGEND

-  Stevenson City Limits
-  State Border
-  Parcel
-  River Miles
-  Public Roads
-  Streams and Rivers

Red areas are designated via FEMA FIRM Map 530161 A Panels 01-02.

Yellow areas are designated via FEMA FIRM Map 530160, Panel 425.



N

0 200 400 600 800 1,000 Feet

Absolute Scale: 1:15,000

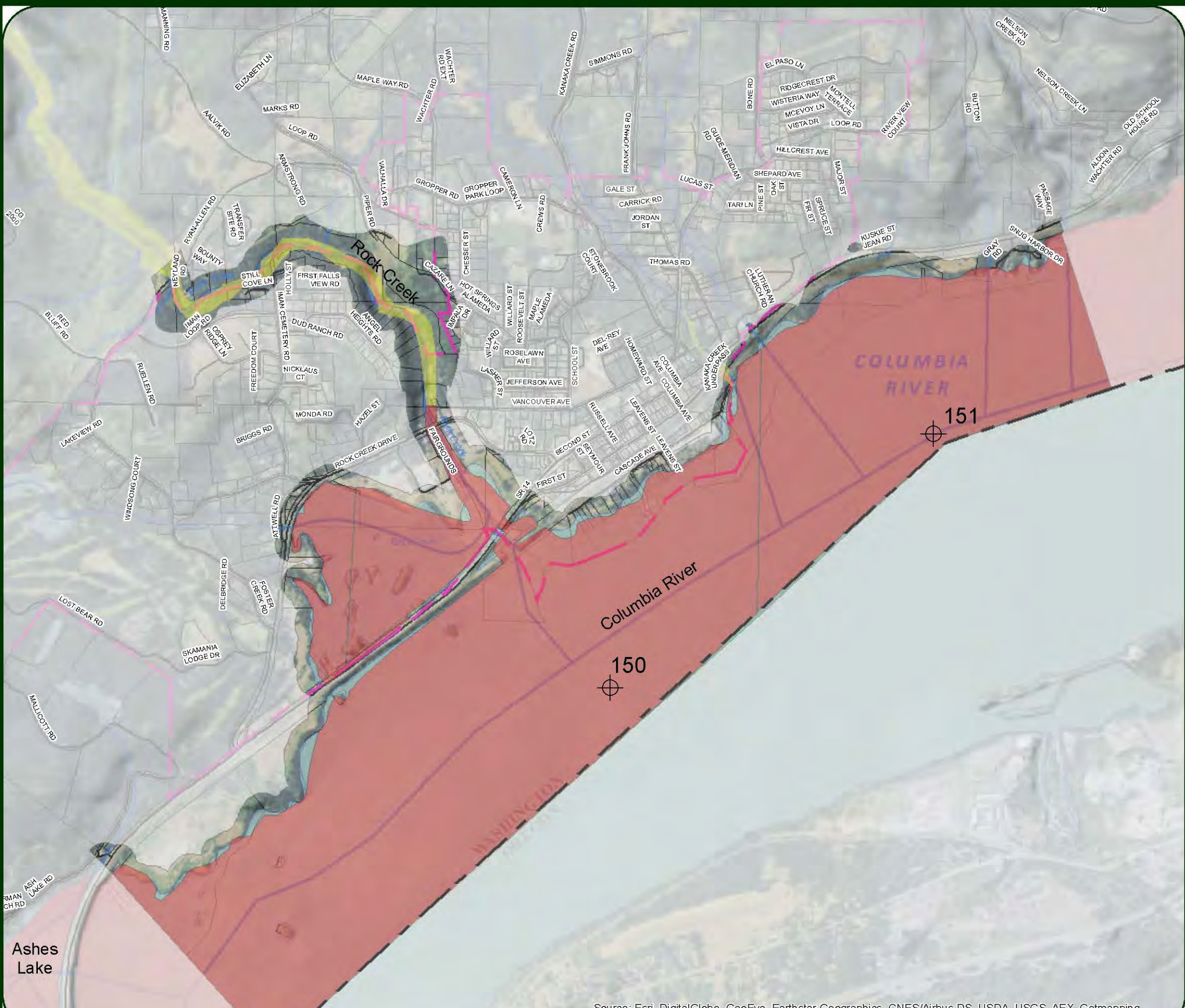
Relative Scale: 1 inch = 1,250 feet

Shoreline jurisdiction boundaries depicted on the map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only.

Additional site-specific evaluation may be needed to confirm or modify the information shown on this map. Shoreline jurisdiction will be determined at time of project review using the best available site-specific information.



BergerABAM; 6/5/2015



Ashes Lake

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

FIGURE 6A Channel Migration Zones

MEMORANDUM

To: Skamania County SMP Update Team
From: Jay Cook, Hydrogeologist, WA Department of Ecology
Date: May 19, 2016
Subject: Channel migration zone analysis for SMA streams in Skamania County

Provided with this memo is a collection of digital data files (ArcGIS map package) that show the results of a planning-level assessment of channel migration zones completed on behalf of the County for the Shoreline Master Program (SMP) Update.

The GIS map data provided by Ecology include two layers. The first is a line layer of the Planning Level Channel Migration Zone (pCMZ) boundaries. The second is a point layer with comments of notable observations, which is not required for the SMP update but hopefully will provide some useful information.

Please note that the pCMZs within the map package are currently drafts. Skamania County, upon review of the pCMZ map data and this document, may contact Ecology to discuss the delineations and the possibility and protocol for adjustments prior to finalizing.

Understanding the low development pressure in the federally owned lands within Skamania County and to expedite the process of generating pCMZs, the county was divided into two parts – low development potential (federally owned land) and higher development potential (privately held land within the National Forest and privately owned land within the rest of the county). In low-development areas, the pCMZ was auto-generated based on channel confinement and valley width. In the higher-development areas, a standard pCMZ analysis was performed.

Low Potential Development Areas



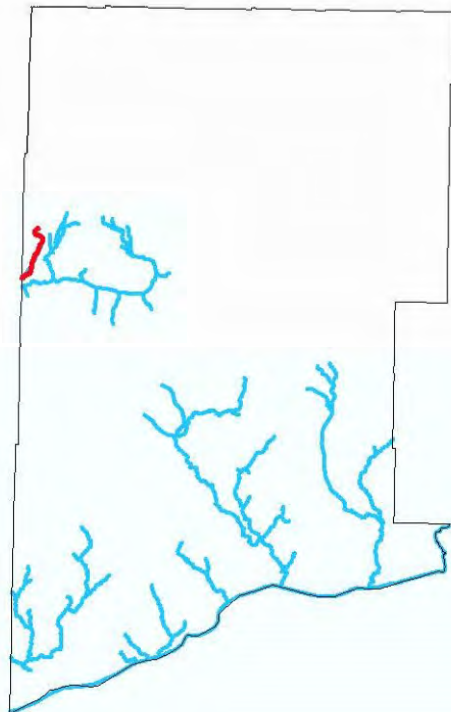
Auto-generated pCMZs

- In GIS, the SMA-jurisdiction streams layer was compared to the CHAMP (Channel Migration Potential) layer. CHAMP layer streams segments, which are present upstream of the 20 cubic feet per second (cfs) regulatory threshold, were trimmed to match the SMA jurisdictional extent. CHAMP data are described in Ecology Publication No. 15-06-003, "Screening Tools for Identifying Migrating Stream Channels in Western Washington" and are available for public use at the Department of Ecology website.
- The relative degree of channel confinement, found in the CHAMP dataset, was selected as the most suitable attribute to categorize stream segments for auto-generating pCMZs. Stream segments were divided into two categories: 1) unconfined, and 2) confined and moderately confined. The Screening Tools publication suggests that in confined and moderately confined stream settings, the valley bottom is a reasonable and conservative approximation of the planning level CMZ. The publication does not offer similar guidance for unconfined settings. Thus, the standard pCMZ methodology, outlined in Ecology's publication No. 14-05-025, "Methodology for Delineating Planning Level Channel Migration Zones", was consulted to aid in appropriately locating pCMZs. The auto-generated pCMZs were assigned as follows:
 - o Confined and moderately confined segments: pCMZ = Valley Bottom Width (attribute within CHAMP data layer).
 - o Unconfined segments: pCMZ = Valley Bottom Width plus 500 feet. Rationale for this approach is as follows: Ecology's pCMZ publication prescribes first delineating the "Modern Valley Bottom" (MVB), followed by situating the pCMZ at some distance relative to the MVB. In settings with very wide valleys relative to the stream, the pCMZ may be placed streamward of the MVB. In settings where the stream is likely to impinge on the valley wall, the pCMZ may be placed outside of the MVB to recognize potential erosion due to undercutting of valley walls. The placement of the pCMZ when outside of the MVB for any segment is controlled by several factors, including the probability of impingement against valley walls, erodibility of valley wall materials, and height of the valley wall. In settings with low erodibility and high valley walls, as generally expected in northern Skamania County, the methodology suggests the pCMZ be placed up to one channel width outside the MVB. In order to assign a common, protective "buffer" distance outside of the valley bottom for all streams in the low-development area, the area stream with the widest active channel, Muddy River, was evaluated. The active channel for Muddy River reaches more than 1,000 feet in width in a few places. While this appears to be atypically wide for streams in the general area, it was a consideration in determining the common pCMZ placement for unconfined stream segments. Considering the Muddy River channel, the hydrologic and geologic setting, and that no migration analysis was performed, it was determined that a reasonable and protective pCMZ for all unconfined stream segments is 500 feet outside of the valley bottom defined in the CHAMP dataset
- It should be noted that pCMZ areas delineated in this fashion are very coarse, and depending on actual stream location versus stream-location data in GIS, the delineated pCMZ area could be significantly misaligned. **Skamania County should narratively explain in their SMP update that**

proposed development near (inside or outside of) these auto-generated pCMZs should first be analyzed on the ground to determine if the project is actually within the valley bottom for confined stream segments or within about 500 feet of the valley bottom for unconfined stream segments. Additionally, the SMP update should note that proposed developments within the physical, on-the-ground boundaries will require a site-specific, detailed CMZ analysis. Ecology Publication #03-06-027 “A Framework for Delineating Channel Migration Zones” provides a methodology for such a detailed analysis that should be conducted by a qualified professional.

- There are 5 streams/stream segments within the Low Development Areas that fall under SMA jurisdiction but are not in the CHAMP stream dataset. Three are in the northwest corner of the county – South Coldwater Creek headwaters, North Fork Toutle River, and Studebaker Creek. Two are in the eastern portion of the county – Trout Lake Creek and the upper White Salmon River. Absent CHAMP data, valley width and confinement information, the valley bottom was hand-digitized using available data (USGS Topographic Information from ESRI, 10-m DEM, and Aerial Photos), and the pCMZ was set back 500 feet from the mapped valley bottom.
 - o The upstream portion of South Coldwater Creek is the outfall of Spirit Lake and appears to travel through a tunnel, thus no pCMZ was generated for that section.
- The pCMZ delineation lines within the GIS package overlap at many stream confluences. Where this occurs, the most protective (i.e., farthest from the stream) should be used.

Higher Potential Development Areas



- Standard pCMZ analyses were performed using available desktop methods.
- Note that all mapped CMZs are “Planning-Level”:
 - o Fairly abbreviated process, relying on visible landforms, channel characteristics, valley characteristics, historic migration, and soils/geology. Channel migration rates were not analyzed. Considering the abbreviated nature of the analysis, the pCMZs are relatively conservative (wide). More precise or narrower CMZs could be generated, but a more detailed analysis would require significantly more time and costs.
 - o In many cases, the pCMZ boundary is above the valley bottom onto valley walls as described in the previous section.
 - o For all streams, the “natural” pCMZ was mapped without regard for man-made structures such as levees and roads that may actually limit migration.
- LIDAR available – Lower White Salmon River – available LIDAR data were utilized to generate the pCMZ following the protocol outlined in Ecology’s Planning Level CMZ publication, referenced above.
- No other streams within the county had significant LIDAR coverage. Absent high-resolution data, ten-meter resolution Digital Elevation Model (DEM) data were used to analyze all other streams. Recognizing coarseness of the data and in order to be protective, the pCMZs were intentionally placed slightly farther from the streams than if LIDAR data were available. Relative Water Surface Elevations (RWSE) were produced for all stream segments using the 10-meter DEM data. The RWSEs were used to aid in visibly locating the preliminary pCMZ or to create a contour (5-10 meters) above the water surface to approximate the valley bottom or a reasonable zone above and outward from the active stream. Once generated, the preliminary pCMZ or the contour was manually adjusted (either streamward or landward) based on historic orthophotos, topographic information, and geologic/soils information. Again, protocol from Ecology’s pCMZ document was followed.
- Note, the unnamed stream in red in the map above was not delineated. It appears to be a mistake within the SMA jurisdiction GIS dataset. The stream is not readily evident in orthophotos or USGS topo maps.

Columbia River

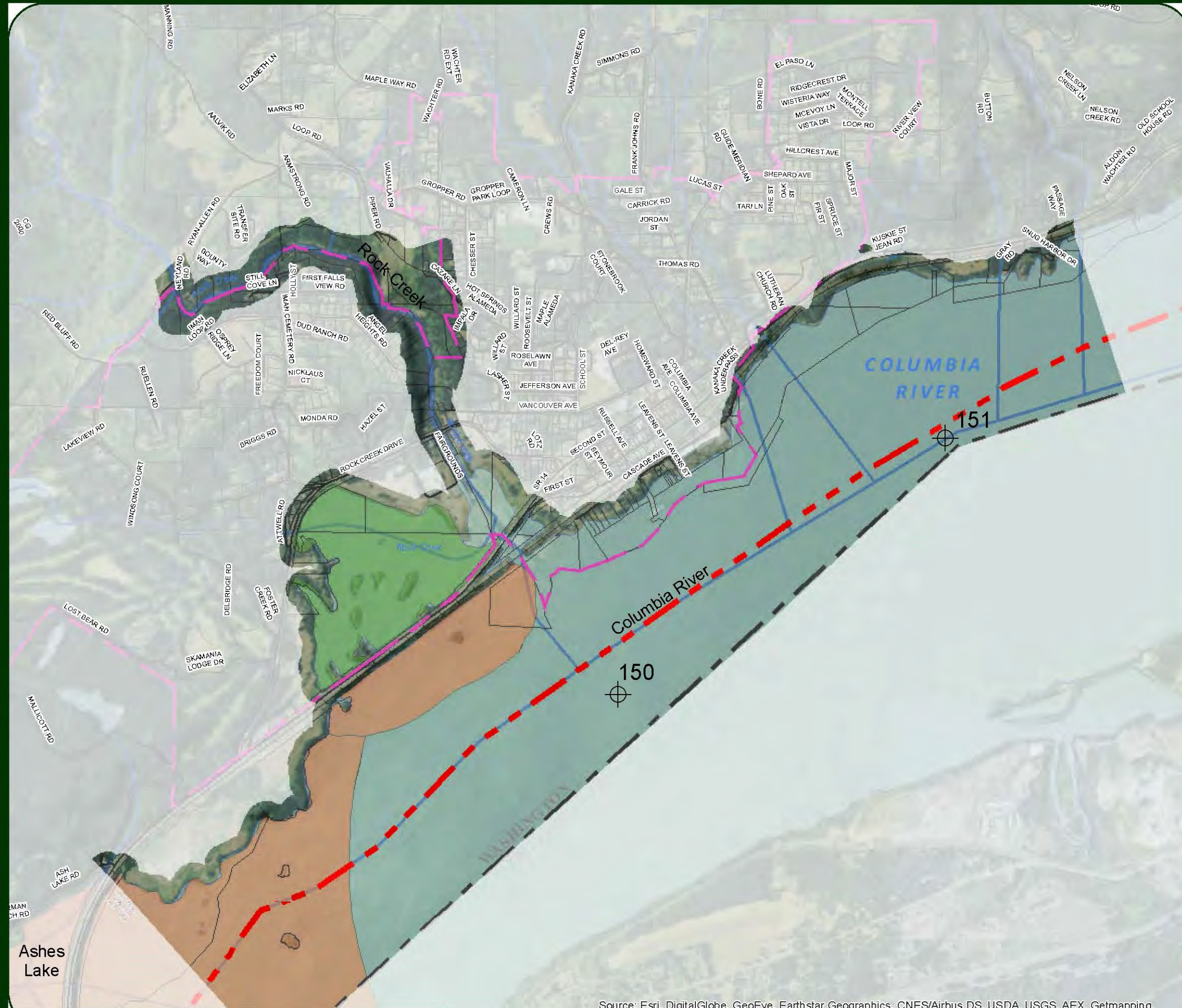
Understanding that the Columbia River has little tendency to migrate and in being consistent with previous CMZ assessments, it was decided to use the existing FEMA 100-year flood zone delineation as the pCMZ. The most current digital flood-zone data available for Skamania County are the FEMA Q3 data, which often do not project well in GIS. This problem, which results in the 100-year flood delineation not aligning properly with the river and adjacent landforms, was noted during assessment of the Q3 data for the Columbia River.

The Columbia River pCMZ delineation presented by Ecology for Skamania County should be recognized in the SMP update as imprecise and should be used only in an advisory capacity. Project-level decisions should utilize existing Flood Insurance Study maps and information and/or more detailed, site-specific delineations.

area and may be the most important layer in terms of understanding the actual locations of encumbered lands. However, all data is retained because it could all be considered valuable for different purposes. Also, when generating the contour line for the purpose of 'cropping' the tract into a specific easement area, it is important to note that the contour line represents only the elevation at the time of the LiDAR data capture (in this case the LiDAR data was collected in 2005-06). Changes to topography (e.g. cut and fill) influence the actual area of easement. Therefore it is important to have the entire area of each tract as well as its specified high elevation information. This data is available in the complete tract (polygon) dataset. Also, the full legal scope of each easement is defined within the original recorded legal document. These should be reviewed prior to making any firm judgment regarding the location of each easement.

In the case of cropping the tracts that had a defined high elevation of 800,000 c.f.s. or where the high elevation was not defined (i.e. entered as 99999 in the data), these tracts were cropped at the 95 foot contour line. While this may not be the legally defined high contour location of the easement, it allows the tracts to be cut to show an estimate of actual easement area.

FIGURE 7: PHS Data



LEGEND

- Stevenson City Limits
- State Border
- Parcel
- River Miles
- Rail Road
- Public Roads
- Streams and Rivers

WDFW PHS Data

- Salmon Stock Inventory (SaSI)
- Canada Goose
- Waterfowl Concentrations

0 200 400 600 800 1,000 Feet

Absolute Scale: 1:15,000 Relative Scale: 1 inch = 1,250 feet

N

Shoreline jurisdiction boundaries depicted on the map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm or modify the information shown on this map. Shoreline jurisdiction will be determined at time of project review using the best available site-specific information.

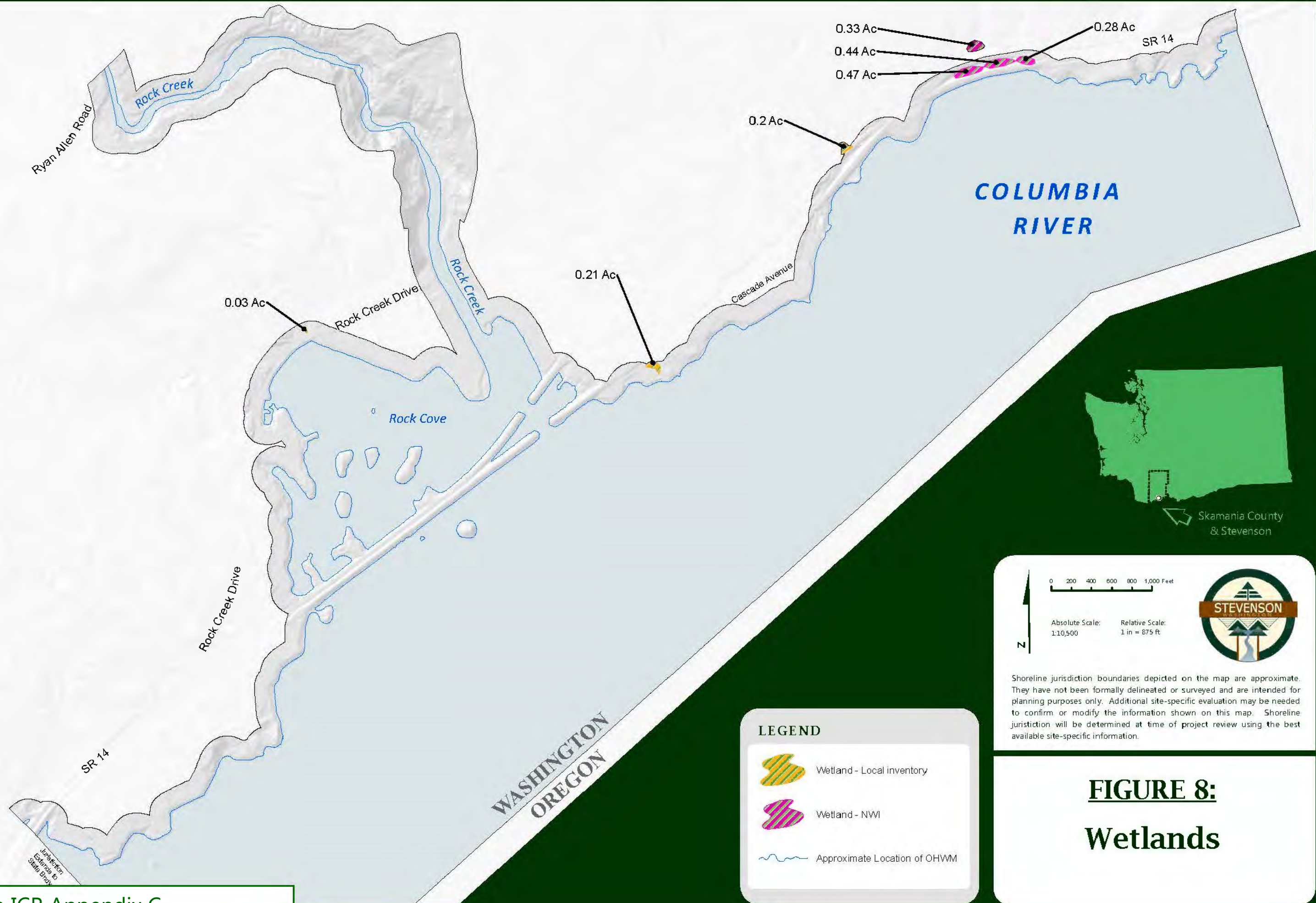



BergerABAM STEVENSON

BergerABAM: 6/5/2015



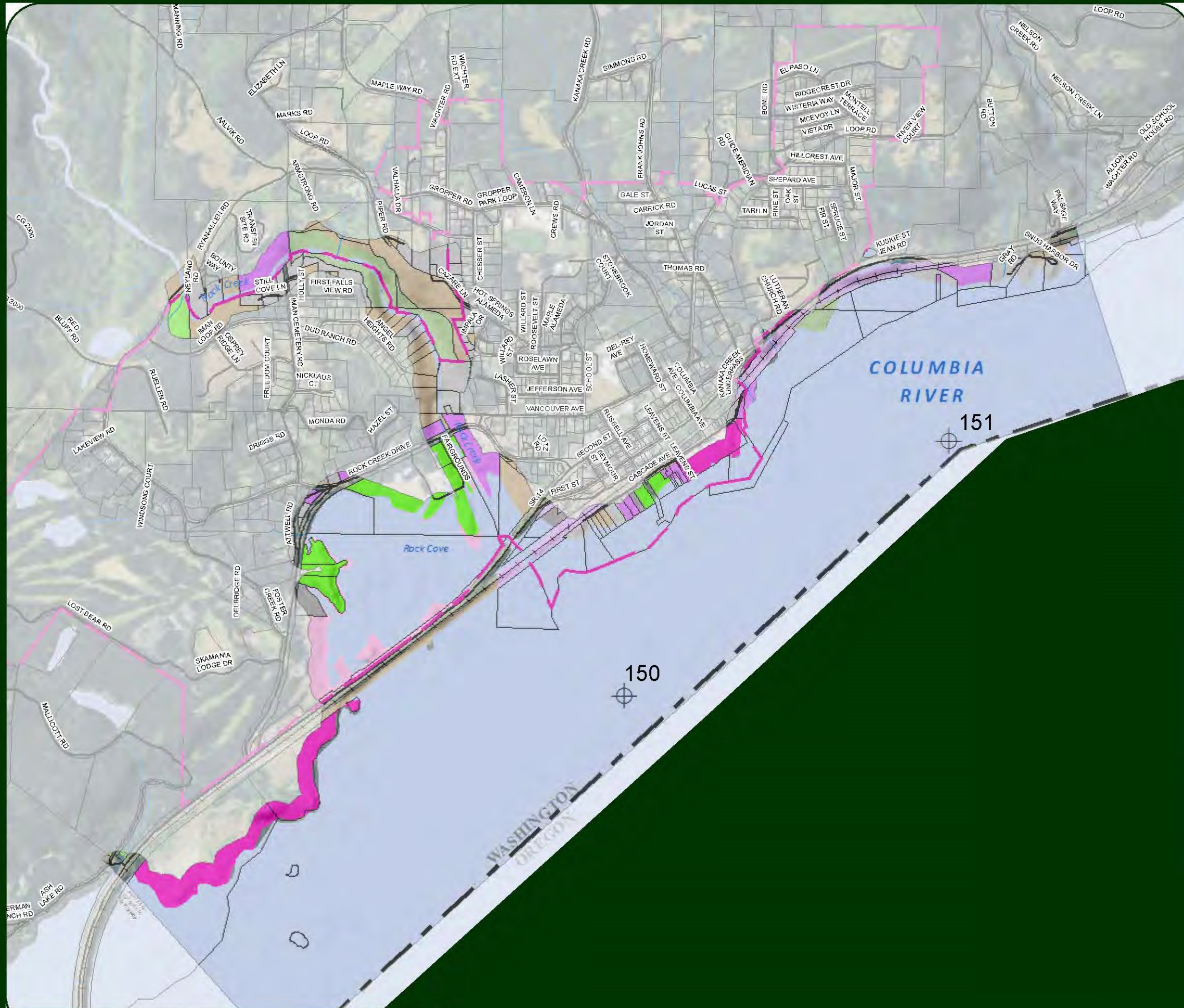
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community



Shoreline jurisdiction boundaries depicted on the map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm or modify the information shown on this map. Shoreline jurisdiction will be determined at time of project review using the best available site-specific information.

**FIGURE 8:
Wetlands**

FIGURE 9: Existing Land Use



LEGEND

- Stevenson City Limits
- Public Roads
- State Border
- Rail Road
- Parcel
- River Miles

Land Use

- Single Family
- Multi-Family
- Manufacturing
- Utility-Trans
- Services
- Culture-Recreation
- Parks
- Private/Commercial Forest
- Undeveloped
- Open Space

0 200 400 600 800 1,000 Feet

Absolute Scale: 1:15,000 Relative Scale: 1 inch = 1,250 feet

Shoreline jurisdiction boundaries depicted on the map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm or modify the information shown on this map. Shoreline jurisdiction will be determined at time of project review using the best available site-specific information.




BergerABAM; 6/5/2015



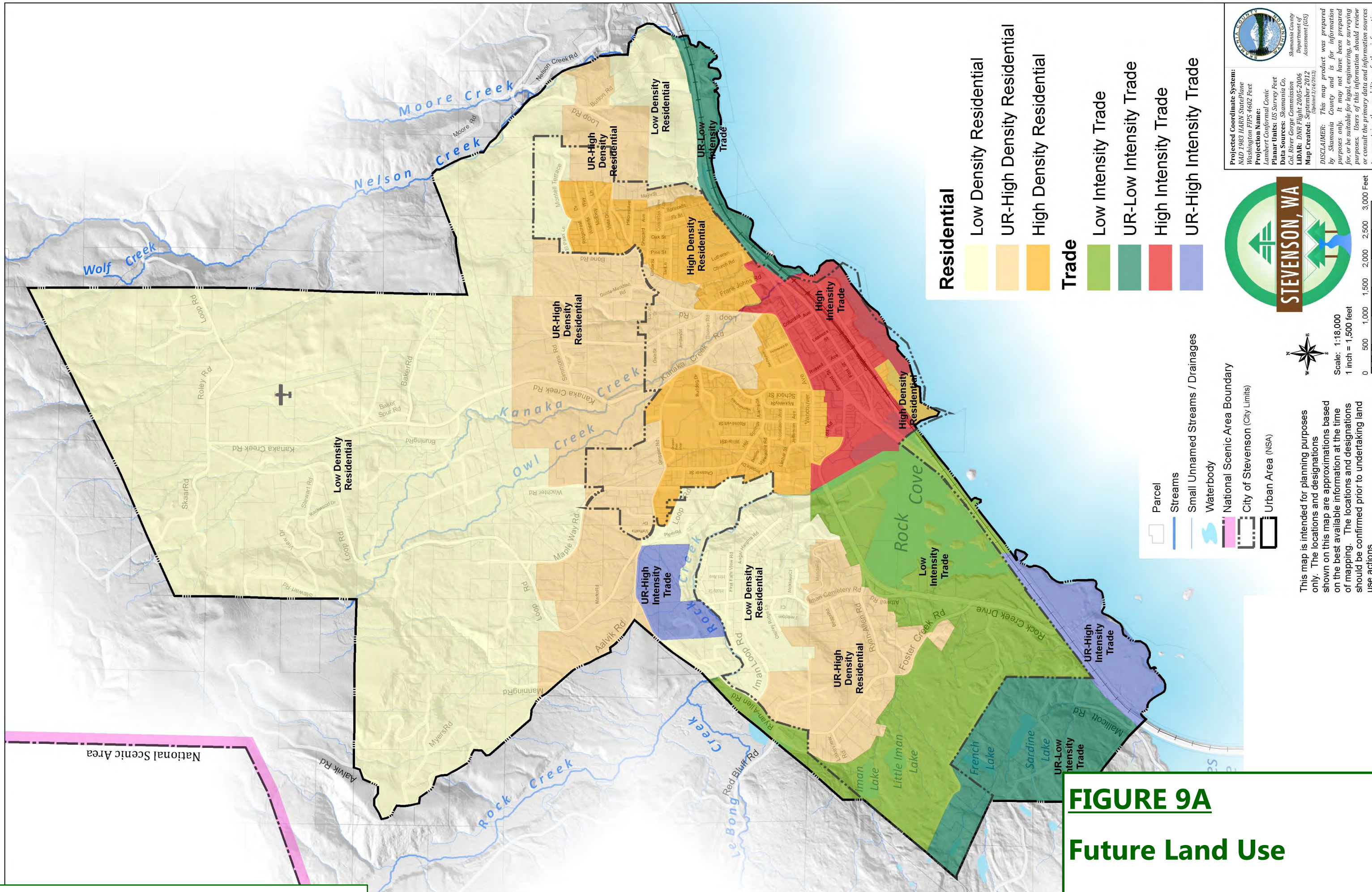
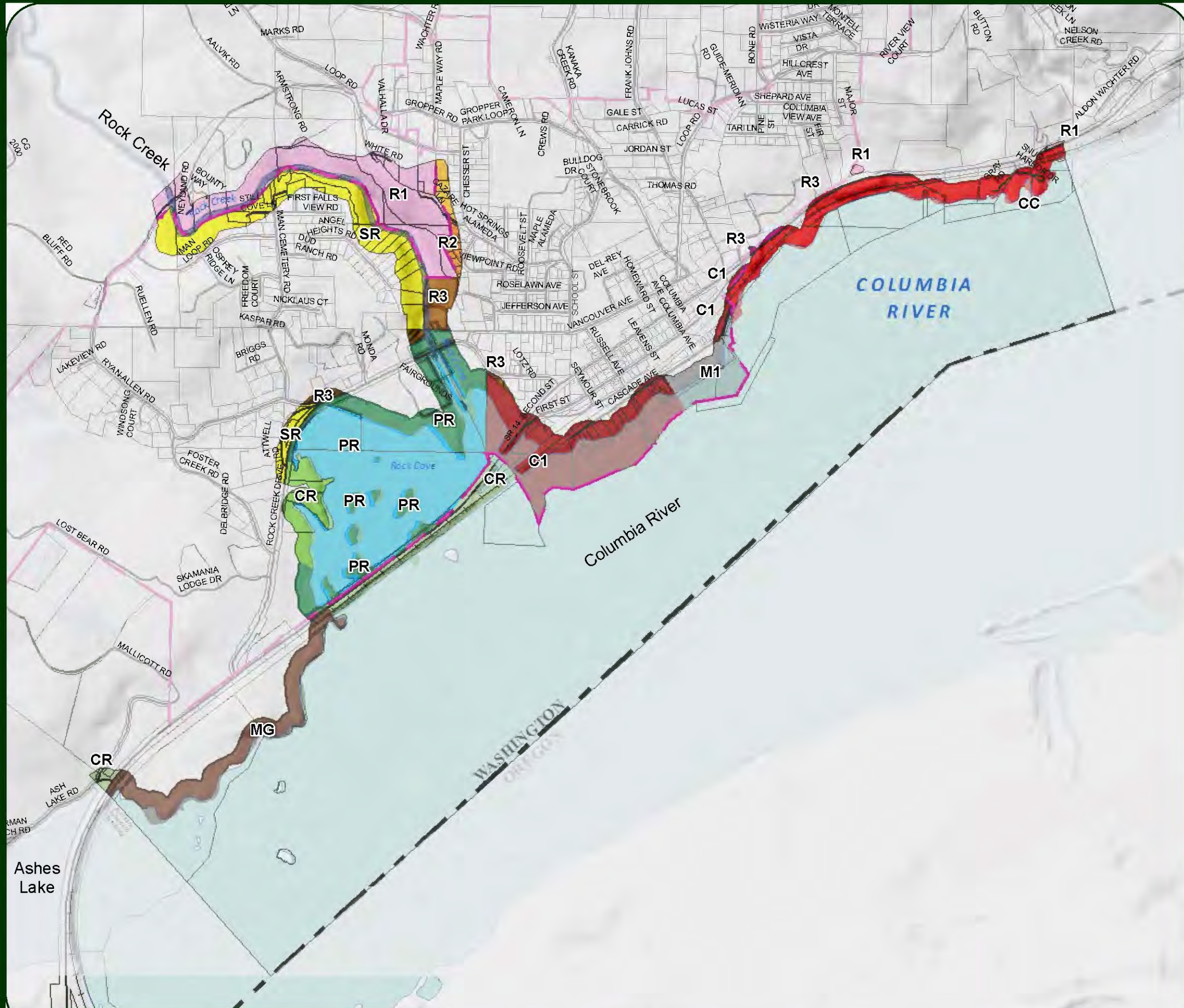


FIGURE 9A
Future Land Use

This map is intended for planning purposes only. The locations and designations shown on this map are approximations based on the best available information at the time of mapping. The locations and designations should be confirmed prior to undertaking land use actions.

FIGURE 10: Zoning



LEGEND

Stevenson City Limits
 Public Roads
 State Border
 Parcel
 Rail Road

Zoning

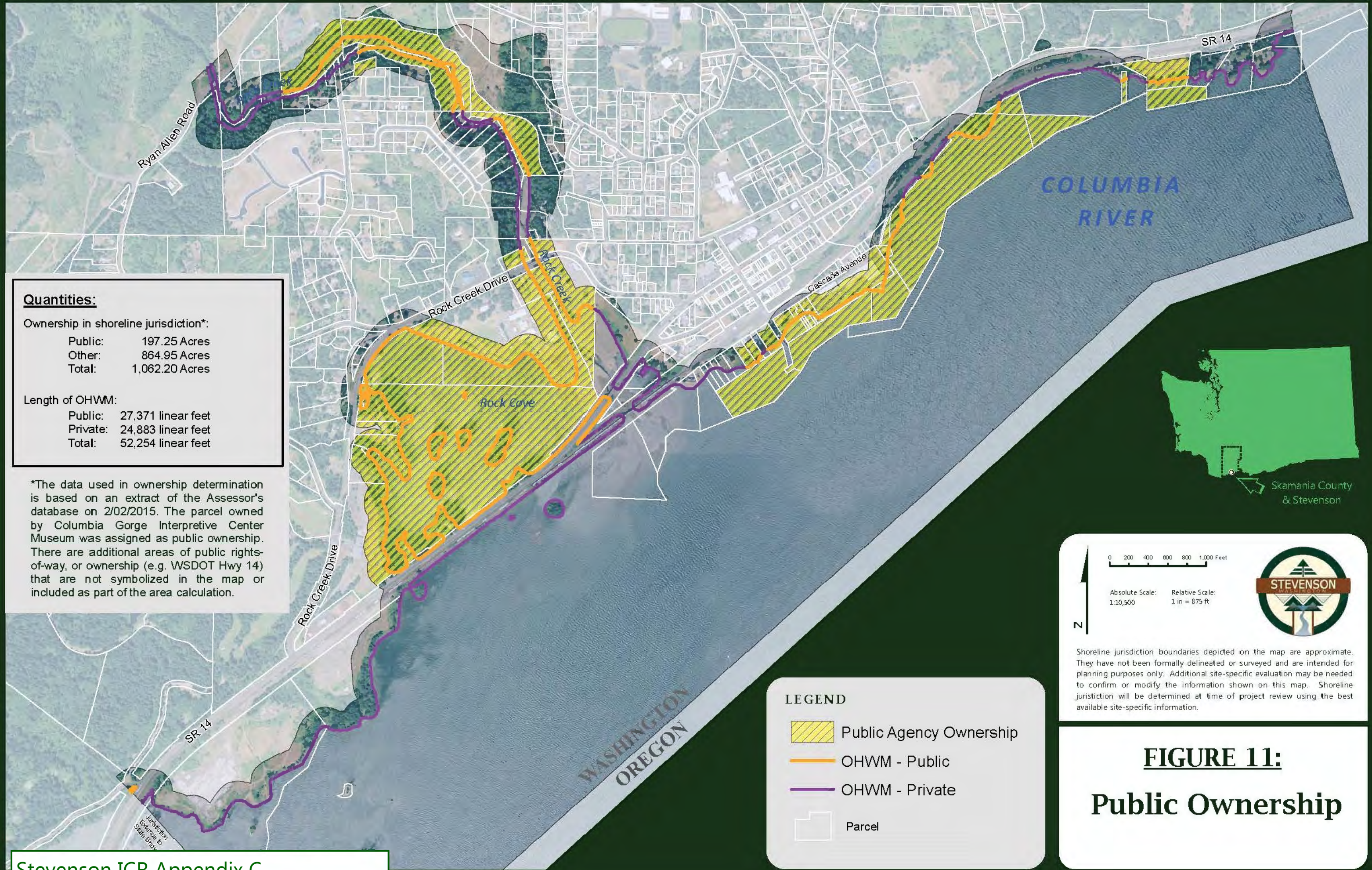
Skamania County	City of Stevenson
 Residential 1 (R1)	 Commercial (C1)
 Residential 2 (R2)	 Commercial Recreation (CR) (Stev)
 Community Commercial (CC)	 Light Industrial (M1)
 Commercial Rec. (CR) (SkaCo)	 Public Use and Recreation (PR)
 Industrial (MG)	 Rock Cove Public Use & Rec. (PR)
	 Single Family Residential (R1)
	 Two Family Residential (R2)
	 Multi-Family Residential (R3)
	 Multi-Family Residential Overlay (R3)
	 Suburban Residential (SR)

0 200 400 600 800 1,000 Feet
 Absolute Scale: 1:15,000 Relative Scale: 1 inch = 1,250 feet
 N

Shoreline jurisdiction boundaries depicted on the map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm or modify the information shown on this map. Shoreline jurisdiction will be determined at time of project review using the best available site-specific information.

BergerABAM, 6/5/2015





Quantities:

Ownership in shoreline jurisdiction*:

Public:	197.25 Acres
Other:	864.95 Acres
Total:	1,062.20 Acres

Length of OHWM:

Public:	27,371 linear feet
Private:	24,883 linear feet
Total:	52,254 linear feet


*The data used in ownership determination is based on an extract of the Assessor's database on 2/02/2015. The parcel owned by Columbia Gorge Interpretive Center Museum was assigned as public ownership. There are additional areas of public rights-of-way, or ownership (e.g. WSDOT Hwy 14) that are not symbolized in the map or included as part of the area calculation.

LEGEND

-  Public Agency Ownership
-  OHWM - Public
-  OHWM - Private
-  Parcel

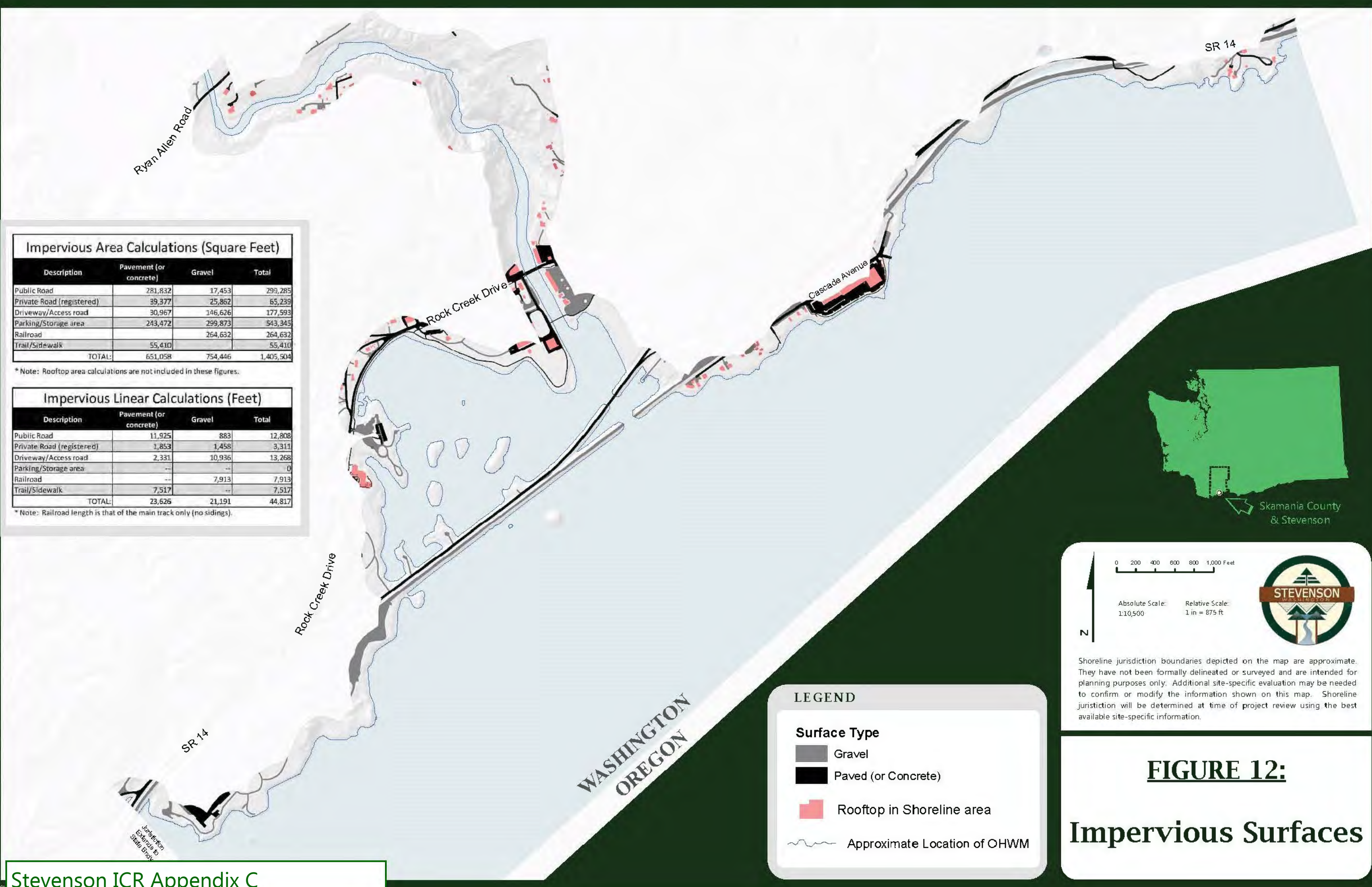
0 200 400 600 800 1,000 Feet

Absolute Scale: 1:10,500 Relative Scale: 1 in = 875 ft



Shoreline jurisdiction boundaries depicted on the map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm or modify the information shown on this map. Shoreline jurisdiction will be determined at time of project review using the best available site-specific information.

FIGURE 11:
Public Ownership



Impervious Area Calculations (Square Feet)

Description	Pavement (or concrete)	Gravel	Total
Public Road	281,832	17,453	299,285
Private Road (registered)	39,377	25,862	65,239
Driveway/Access road	30,967	146,626	177,593
Parking/Storage area	243,472	299,873	543,345
Railroad		264,632	264,632
Trail/Sidewalk	55,410		55,410
TOTAL:	651,058	754,446	1,405,504

* Note: Rooftop area calculations are not included in these figures.

Impervious Linear Calculations (Feet)

Description	Pavement (or concrete)	Gravel	Total
Public Road	11,925	883	12,808
Private Road (registered)	1,853	1,458	3,311
Driveway/Access road	2,331	10,936	13,268
Parking/Storage area	--	--	0
Railroad	--	7,913	7,913
Trail/Sidewalk	7,517	--	7,517
TOTAL:	23,626	21,191	44,817

* Note: Railroad length is that of the main track only (no sidings).



0 200 400 600 800 1,000 Feet

Absolute Scale: 1:10,500 Relative Scale: 1 in = 875 ft

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LEGEND

Surface Type

- Gravel
- Paved (or Concrete)
- Rooftop in Shoreline area
- Approximate Location of OHWM

FIGURE 12:
Impervious Surfaces



Rooftop Statistics:
 Sum of all rooftops = 212,076 Sq Ft
 Largest single structure = 35,425 Sq Ft (the portion falling in Shoreline)
 Average size in Shoreline per structure = 2,020 Sq Ft
 Count of structures = 105 (partially or fully within Shoreline)



0 200 400 600 800 1,000 Feet

Absolute Scale: 1:110,500 Relative Scale: 1 in = 875 ft

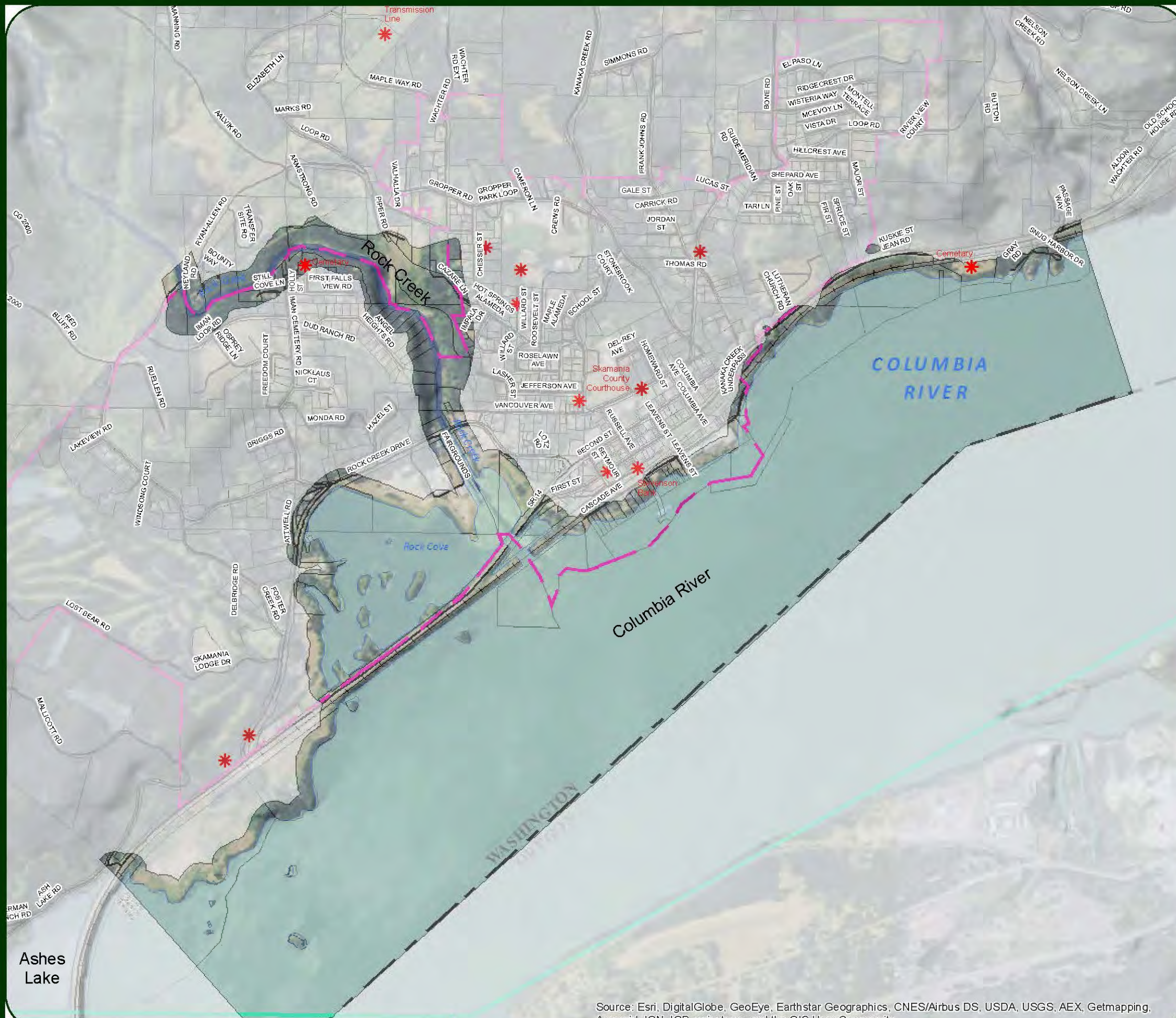
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LEGEND

- Rooftop in Shoreline area
- ~~~~~ Approximate Location of OHWM

FIGURE 13:
Rooftops

FIGURE 14: Archeology / Historic



LEGEND

- Stevenson City Limits
- Rail Road
- State Border
- Public Roads
- Parcel

Skamania / Stevenson Historic Inventory

- Historic Property Inventory Points
- Washington Register Districts *(Not on map)
- Washington Register Properties *(Not on map)

0 200 400 600 800 1,000 Feet

Absolute Scale: 1:15,000
Relative Scale: 1 inch = 1,250 feet

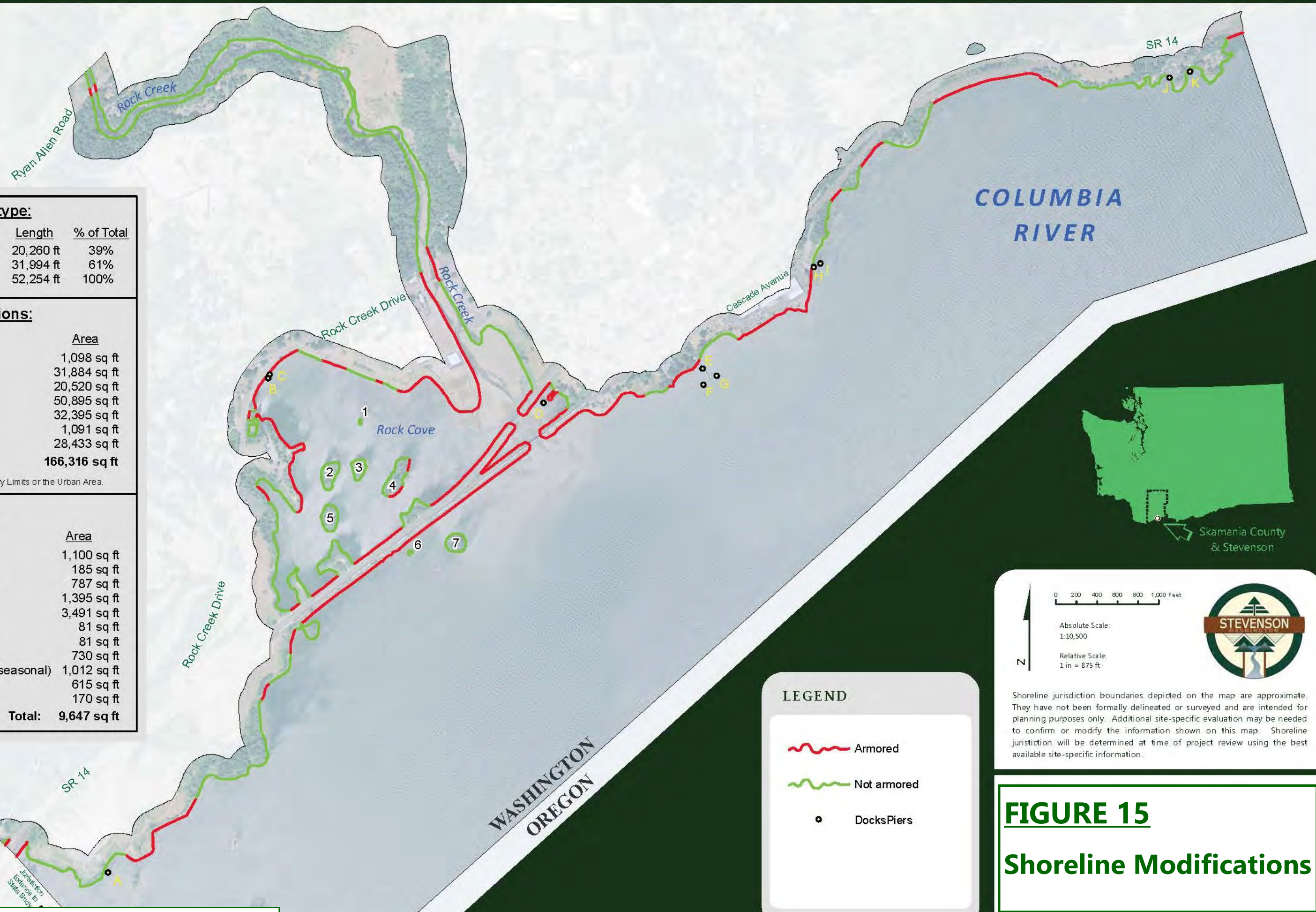
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BergerABAM; 8/5/2015

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community





Quantities by type:

Type	Length	% of Total
Armored	20,260 ft	39%
Not armored	31,994 ft	61%
Total shoreline:	52,254 ft	100%

Island dimensions:



	Perimeter	Area
1	133 ft	1,098 sq ft
2	731 ft	31,884 sq ft
3	563 ft	20,520 sq ft
4	1010 ft	50,895 sq ft
5	681 ft	32,395 sq ft
6	127 ft	1,091 sq ft
7*	606 ft	28,433 sq ft
Total:	3,851 ft	166,316 sq ft

* Island is not within City Limits or the Urban Area.

Docks / Piers:

	Description	Area
A	Private	1,100 sq ft
B	Communal	185 sq ft
C	Communal	787 sq ft
D	Private	1,395 sq ft
E	Communal	3,491 sq ft
F	Communal	81 sq ft
G	Communal	81 sq ft
H	Communal	730 sq ft
I	Communal (seasonal)	1,012 sq ft
J	Private	615 sq ft
K	Private	170 sq ft
	Total:	9,647 sq ft

LEGEND

-  Armored
-  Not armored
-  Docks/Piers

0 200 400 600 800 1,000 Feet

Absolute Scale:
1:10,500

Relative Scale:
1 in = 875 ft.



Shoreline jurisdiction boundaries depicted on the map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm or modify the information shown on this map. Shoreline jurisdiction will be determined at time of project review using the best available site-specific information.

FIGURE 15
Shoreline Modifications

Washington State Fish Passage

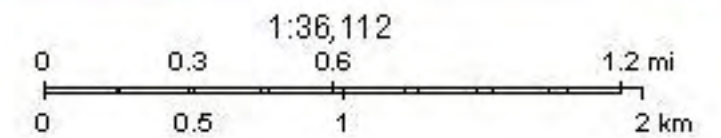


September 10, 2018

- Unknown
- Diversion
- ▲ Barrier, Unknown Percent Passable
- ▲ Total Fish Passage Blockage
- ▲ Partial Fish Passage Blockage
- Not a barrier
- Corrected Barriers

Stevenson ICR Appendix C

FIGURE 16
Fish Passage Barriers



Washington Department of Fish and Wildlife, Habitat Program, Restoration Division, Restoration Division of the DFW Habitat Program, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN,



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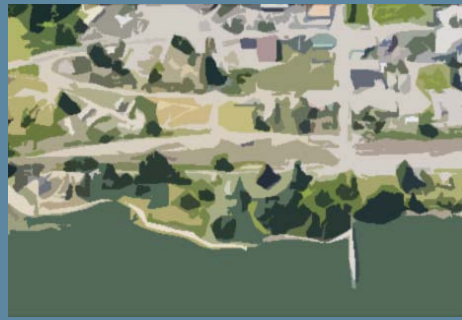
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STEVENSON

SHORELINE MASTER PROGRAM



City of Stevenson
SEPA Review Draft Shoreline Master Program

November 2018

Ecology Grant # G1200-044
Tasks 3.2 through 3.5

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DRAFT



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Chapter 1 – Introduction & Goals

1.1 Title

This document shall be known and may be cited as the Stevenson 2018 Shoreline Master Program (SMP).

1.2 Adoption Authority

This SMP is adopted under the authority granted by the Shoreline Management Act (SMA) of 1971 embodied in the Revised Code of Washington (RCW) Chapter 90.58 and in compliance with the Shoreline Master Program guidelines contained in Washington Administrative Code (WAC) 173-26 as may be hereafter amended.

1.3 Shoreline Jurisdiction

1.3.1 Shoreline Management Act Jurisdiction Definition

As defined by the SMA, "shoreslines of the state" include certain waterbodies plus their associated "shorelands." At a minimum, the waterbodies designated as "shoreslines" in Stevenson are streams and rivers whose mean annual flow is 20 cubic feet per second (cfs) or greater and lakes of 20 acres or larger. Streams and rivers with mean annual flow of 1,000 cfs or greater (west of the Cascade Range) are designated as "shoreslines of statewide significance." Collectively, shoreline jurisdiction includes these waters, the lands underlying them, all shorelands extending landward a minimum of 200 feet in all directions, as measured on a horizontal plane from the ordinary high water mark (OHWM); floodways and contiguous floodplain areas landward 200 feet from such floodways; and all wetlands and river deltas associated with the streams and lakes which are subject to the provisions of this chapter. Such associated wetlands may extend beyond the minimum distance. For any streams and rivers partly within shoreline jurisdiction, jurisdiction starts from an upstream point where the mean annual flow is 20 cfs and continues downstream from that point.

1.3.2 Applicable Shoreline Jurisdiction in Stevenson

The extent of the shoreline jurisdiction shall be determined for specific project proposals based on the actual location of the OHWM, floodway, and the presence and delineated boundary of associated wetlands as may be determined on a site-by-site basis based on adopted definitions and technical criteria.

The 2018 city limits of Stevenson includes 3 waterbodies which are regulated by this SMP. The Columbia River is a shoreline of statewide significance. Rock Cove and Rock Creek are also included as shoreslines of the state in this SMP as depicted on the Shoreline Environment Designation maps in Appendix A. In addition, shoreline jurisdiction also includes the associated wetlands of these waterbodies, however, the City's shoreline jurisdiction does not include optional areas of 100-year floodplain or buffers for critical areas.

This SMP also predesignates areas which are located within the City's Urban Area boundary but currently outside of city limits. Such areas will be considered within Stevenson's shoreline jurisdiction upon annexation. Predesignated areas include extended reaches along the Columbia River, and Rock

Creek, as well as a small reach along Ashes Lake. This SMP does not apply within predesignated areas until the areas are annexed to the City, as consistent with WAC 173-26-150 and -160.

40 **1.3.3 Shoreline Environment Designation Map**

The approximate shoreline jurisdictional area and the Shoreline Environment Designations (SEDs) are delineated on the map(s), hereby incorporated as a part of this SMP that shall be known as the "Stevenson Shoreline Environment Designation Map" (See Appendix A).

45 The boundaries of the shoreline jurisdiction on the maps are approximate. The actual extent of shoreline jurisdiction shall be based upon an on-site inspection and the definitions provided in accordance with SMP Sections 1.3.1 and 1.3.2, Chapter 3, Chapter 7, and in accordance with RCW 90.58.030.

1.4 Vision, Goals, & Purpose of the Shoreline Master Program

1.4.1 Overall Vision & Goals

50 As taken from the 2013 Stevenson Comprehensive Plan, Stevenson's citizens' hope for the future is to look at their town and honestly say:

"Stevenson is a friendly, welcoming community that values excellent schools and a small town atmosphere. The natural beauty is enjoyed by residents and visitors through a network of recreational opportunities. The strength of Stevenson's economy is built upon high quality infrastructure and a vibrant downtown that provides for residents daily needs. Stevenson takes advantage of our unique location on the Columbia River by balancing jobs, commerce, housing and recreation along the waterfront."

55 This vision is founded on the citizens 4 cornerstone principles: High Quality of Life, Natural/Scenic Beauty, Healthy Economy, and Active Waterfront. This SMP includes 7 goals that tie together each cornerstone principle and advance shoreline jurisdictional areas toward the City's overall vision.

- 60 1. **Economic Development** – The shorelines of Stevenson are used by economically productive businesses that are particularly dependent on their shoreline location.
2. **Public Access & Recreation** – The shorelands and shoreline waterbodies of Stevenson support a network of public access, recreation and navigational opportunities.
- 65 3. **Natural Resources & Ecological Functions** – Development within shoreline jurisdiction does not result in a net loss of the ecological functions performed by the City's shoreline areas.
4. **Historic & Cultural Resources** – Waterfront buildings, sites, and resources having historic, cultural and educational value are protected for future generations.
- 70 5. **Public Facilities & Utilities** – Utilities, streets, and public facilities provide a high quality backbone of services that support other shoreline goals.
6. **Property Rights & Single-Family Dwellings** – Single-family homes are located in appropriate places along Stevenson's shorelines and private property rights are protected consistent with the public interest.
- 75 7. **Coordinated Management** – Development and use of Stevenson's shorelines advance local, state, and national interests.

1.4.2 Purpose of this SMP

The purpose of the SMP is to:

1. Guide the balanced development of industrial, commercial, residential recreational and natural uses of Stevenson's shorelines in accordance with local goals in compliance with the requirements of the SMA.
2. Support development of improved shoreline access in the Stevenson area.
3. Reduce impediments to attracting waterfront investors.
4. Ensure that use and development under the SMP will result in no net loss of ecological functions.
5. Ensure optimum implementation of the SMA for projects along the Columbia River, a shoreline of statewide significance.
6. Protect, enhance, and maintain natural, scenic, historic, architectural, and recreational qualities along the Columbia River.
7. Provide prompt, predictable, open, and uncomplicated processes for the fair and equitable review of shoreline proposals in Stevenson.

1.5 Shoreline Master Program Applicability to Development

The SMP shall apply to all land and waters under the jurisdiction of Stevenson as identified in SMP Sections 1.3.1, 1.3.2, and 1.3.3 above. If the provisions of the SMP conflict with other applicable local ordinances, policies, and regulations, the requirement that most supports the provisions of the SMA as stated in RCW 90.58.020 and that provide the greatest protection of shoreline ecological resources shall apply, as determined by the Shoreline Administrator.

This SMP shall apply to every person, individual, firm, partnership, association, organization, corporation, local or state governmental agency, public or municipal corporation, or other non-federal entity that develops, owns, leases, or administers lands, wetlands, or waters that fall under the jurisdiction of the SMA. This SMP applies within the external boundaries of federally-owned lands (including but not limited to, private inholdings in a national forest or national wildlife refuge). The SMP shall not apply to federal agency activities on federal lands. Please see SMP Section 2.5 below for more information on when a permit is required. Regardless of their exempt status, exempt uses or modifications are still considered review activities under this program even if they do not require a shoreline substantial development permit. Such activities must continue to demonstrate compliance with the policies and regulations contained in the SMP in accordance with WAC 173-27-040(1)(b) and be authorized by a statement of exemption. The SMP applies to all review activities (i.e. shoreline uses, development, and modifications) proposed within shoreline jurisdiction.

1.6 Relationship to Other Plans and Regulations

In addition to obtaining authority to undertake shoreline use, development, or modification in accordance with the SMP, applicants must also comply with all applicable federal, state, or local statutes or regulations. These may include, but are not limited to, a Section 404 Dredge & Fill Permit by the U.S. Army Corps of Engineers (USACE), Section 401 Water Quality Certification by the Washington Department of Ecology (Ecology), Hydraulic Project Approval (HPA) from the Washington Department of Fish and Wildlife (WDFW), and State Environmental Policy Act (SEPA) approval (RCW Chapter 43.21 and WAC Chapter 197-11). The Stevenson Municipal Code also applies, including Title 15 "Buildings and Construction", Title 17 "Zoning", and Title 18 "Environmental Protection", and all other applicable code provisions. Applicants must also comply with the Stevenson Comprehensive Plan and any applicable subarea plan.

120 The City's Shoreline Administrator or designee should inform applicants for shoreline development of
all applicable regulations to the best of the Shoreline Administrator's knowledge, provided that the
final responsibility for complying with all statutes and regulations shall rest with the applicant.

1.7 Liberal Construction

125 As provided for in RCW 90.58.900, Liberal Construction, the SMA is exempted from the rule of strict
construction; the SMA and this SMP shall therefore be liberally construed to give full effect to the
purposes, goals, objectives, and policies for which the SMA and this SMP were enacted and adopted.

1.8 Organization of this Shoreline Master Program

This SMP is divided into 7 chapters:

130 **Chapter 1 – Introduction:** Provides general background information on the purpose of the SMP and
explains shoreline jurisdiction, the SMP's applicability to development and actions within the shoreline,
and the organization of the document.

Chapter 2 – Administrative Provisions: Provides a system by which Shoreline Permits, (i.e., substantial
development, conditional use, and variance) as well as statements of exemption are considered.

135 **Chapter 3 – Shoreline Environment Designation Provisions:** Defines the environmental designations
of all the shorelines of the state in the City's jurisdiction. Designation criteria and management policies
and regulations specific to the 5 designated shoreline environments (Aquatic, Natural, Shoreline
Residential, Urban Conservancy, and Active Waterfront) are detailed in this chapter.

140 **Chapter 4 – General Provisions for All Uses:** Articulates the goals and policies of the SMP that
establish the foundation for all other portions of the SMP. In addition, this chapter contains general
provisions which are policies and regulations that apply to all shoreline use and development
regardless of its location or the Shoreline Environment Designation in which it is located. Topics
addressed in this chapter include archaeological and historic resources, critical areas, flood hazards,
public access, water quality, and shorelines of statewide significance.

145 **Chapter 5 – Specific Shoreline Use Provisions:** Details the policies and regulations applicable to
specific shoreline use categories (e.g., aquaculture, commercial, industrial, boating facilities and
overwater structures, residential, recreation, transportation, utilities), based on the Shoreline
Environment Designation in which the use is proposed to locate.

Chapter 6 – Shoreline Modification Provisions: Details the policies and regulations applicable to
activities that modify the physical configuration or qualities of the land- water interface, including
dredging, excavation, fill, restoration, and stabilization.

150 **Chapter 7 – Definitions:** Provides definitions for words and terms used in the SMP.

1.9 Periodic Review & Amendments to the Shoreline Master Program

1. Any provisions of this SMP, including the map adopted in Appendix A, may be amended as
provided for in RCW 90.58.120 and .200 and WAC 173-26.
- 155 2. This SMP shall be periodically reviewed and amendments shall be made as are necessary to
reflect changing local circumstances, new information, or improved data, and changes in state
statutes and regulations. Periodic review of this SMP is subject to the timeline and frequency
adopted in WAC 173-26-090.

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3. As part of the required SMP periodic review, an evaluation report assessing the effectiveness of the SMP in achieving no net loss shall be prepared and considered in determining whether policies and regulations are adequate in achieving this requirement.
4. The SMP periodic review and amendment process shall be consistent with the requirements of WAC 173-26 or its successor and shall include a local citizen involvement effort and public hearing to obtain the views and comments of the public.
5. Amendments or revisions to the SMP, as provided by law, do not become effective until approved by Ecology.

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1.10 Effective Date

This SMP and all amendments thereto shall take effect 14 days from the date of Ecology's written notice of final action (RCW 90.58.090(7)), and shall apply to new applications submitted on or after that date and to applications that have not been determined to be fully complete by that date. Appendix B is provided as a location to curate the dates and text of Ecology's written notices of final action.

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Chapter 2 – Administrative Provisions

2.1 Purpose & Applicability

Unless specifically exempted by statute, all uses and development occurring within shoreline jurisdiction must conform to Chapter 90.58 RCW, the SMA and this SMP whether or not a Shoreline Permit (i.e., Shoreline Substantial Development Permit, Shoreline Conditional Use Permit, Shoreline Variance) is required. This Chapter 1) establishes an administrative system assigning responsibilities for implementation of the SMP and shoreline permit review; 2) prescribes an orderly process by which to review proposals and permit applications; and 3) ensures that all persons affected by this SMP are treated in a fair and equitable manner. Where inconsistencies or conflicts with the Stevenson Municipal Code (SMC) exist, this SMP shall prevail.

2.2 Shoreline Administrator

As provided herein, the Shoreline Administrator is given the authority to interpret and apply, and the responsibility to enforce, this SMP and SMC 18.08 in compliance with the SMA.

2.3 Pre-Application Procedures

2.3.1 Pre-Application Conference – Required

A pre-application conference for all proposed review activities within shoreline jurisdiction is required. The Shoreline Administrator may waive this requirement if the applicant requests such in writing and demonstrates that the usefulness of a pre-application meeting is minimal.

2.3.2 Pre-Application Conference – Purpose & Outcomes

The purpose of the pre-application conference is to review the applicant's proposal and for the Shoreline Administrator to explain the type of permitting procedures necessary to ensure compliance with this SMP. A written summary of this conference may be prepared to assist the remainder of the review process. This summary should include a description of the proposal, contact information for the applicant and any consultants assisting the applicant, a listing of the permits required, and any special submittal requirements necessary for to ensure compliance with this SMP.

2.3.3 Determination of Ordinary High Water Mark

For any development where a determination of consistency with the applicable regulations requires a precise location of the OHWM, the mark shall be located precisely with assistance from Ecology and City staff, or a qualified professional, and the biological and hydrological basis for the location shall be included in the development plan. Where the OHWM is neither adjacent to or within the boundary of the project, the plan shall indicate the distance and direction to the nearest OHWM of a shoreline.

2.4 Permit Process

2.4.1 Permits Required

1. Any person wishing to undertake 1) activities requiring a Shoreline Permit or 2) exempt development on shorelines shall apply to the Shoreline Administrator for an appropriate Shoreline Permit or Statement of Exemption.
2. All non-exempt activities proposed within the jurisdiction of the SMA, and this SMP shall first obtain a Shoreline Permit. No such activity shall be undertaken unless a permit has been obtained and the appeal period has been completed and any appeals have been resolved and/or the applicant has been given permission to proceed by the proper authority.

2.4.2 Application Contents

1. Proposed exempt developments shall submit an application on forms prepared by the Administrator together with such information necessary to determine consistency with SMP Section 2.5.
2. Proposed nonexempt development shall submit a Joint Aquatic Resource Permit Application (JARPA) to the City along with the following:
 - a. Complete site plan, including parcel boundary, OHWM, a general indication of the character of vegetation found on the site, and dimensions and locations of all existing and proposed structures and improvements.
 - a. A narrative describing the proposal in detail including how the proposal is consistent with this SMP.
 - b. Identification of all critical areas on the subject property.
 - c. All appropriate project and construction details (e.g., building elevations, construction timelines, grading plans, (re)vegetation plans, etc.).
 - d. Technical assessments prepared by a qualified professional. The City may require the applicant to submit a technical assessment addressing how the proposal incorporates the most current, accurate, and complete scientific or technical information available. The technical assessment shall be adequate for the Shoreline Administrator to evaluate the development proposal and all probable adverse impacts to critical areas regulated by this SMP. If adequate factual information exists to facilitate such evaluation, the Shoreline Administrator may determine that a technical assessment is not necessary. The Shoreline Administrator will advise the applicant of existing technical information that may be pertinent to their property. Technical assessments shall be attached to the development permit application package.
 - e. Fish and wildlife management plan, if applicable.
 - f. Proposed mitigation for unavoidable impacts, if necessary.
 - g. If the proposal will require a shoreline variance permit, the applicant's plans shall clearly indicate where development could occur without approval of a variance, the physical features and circumstances on the property that provide a basis for the request, and the location of adjacent structures and uses. To enhance the City's review of the variance proposals, a 3D, SketchUp-compatible model of the proposal is required when proposed at or adjacent to any development for which the city can provide a 3D model.

- 75 h. If it is determined that the information presented is not sufficient to adequately evaluate a proposal, the Shoreline Administrator shall notify the applicant that additional studies as specified herein shall be provided.

2.4.3 Application Review & Processing

- 80 1. When an application is deemed complete, the Administrator may request third-party peer review of any report, assessment, delineation, or mitigation plan by a qualified professional and/or state or federal resource management agency. Such request shall be accompanied by findings supporting the Administrator's decision, which is appealable to the City Council. The City may incorporate recommendations from such third-party reports in findings approving or denying an application. In general, the cost of any third-party review will be the responsibility of the applicant; however, where a project would provide a beneficial public amenity or service, on a case-by-case basis by City Council action, costs may be shared by the City.
- 85 2. The Shoreline Administrator shall review the information submitted by the applicant and, after an optional site visit shall determine the category of project proposed according to SMC 18.08.100.
3. Applications shall be processed according to the timelines and notice procedures listed in SMC 18.08.100 through SMC 18.08.190, the review criteria of this chapter, and WAC 173-27.

2.5 Exemptions from Shoreline Substantial Development Permits

2.5.1 Exemptions – Interpretation & Guidelines

90 Certain review activities are exempt from securing a Shoreline Substantial Development Permit (SSDP). The following guidelines shall assist in determining whether or not a proposed review activity is exempt:

- 95 1. Exemptions—as required by State law—shall be construed narrowly. Only those developments that meet the precise terms of one or more of the listed exemptions in WAC 173-27-040 may be granted a Statement of Exemption (SoE) from the SSDP process.
2. If any part of a proposed development is not eligible for exemption, then a SSDP is required for the entire proposed development project, per WAC 173-27-040(1)(d).
- 100 3. A development or use that is listed as a conditional use pursuant to this SMP or is an unlisted use, must obtain a Shoreline Conditional Use Permit (SCUP) even if the development or use is exempt from a SSDP.
4. When a development or use is proposed that does not comply with the bulk, dimension and performance standards of this SMP, such development or use can only be authorized by approval of a Shoreline Variance (SVAR).
- 105 5. An exemption from the SSDP process is not an exemption from compliance with the SMA (RCW 90.58), this SMP, or any other regulatory requirements. To be authorized, all uses and developments must be consistent with the policies and provisions of this SMP and the SMA. Exemptions must still comply with no net loss of ecological functions, which may require mitigation even though the review activity is exempt.
- 110 6. The following list outlines common exemptions that shall not be considered substantial developments for the purpose of this SMP. This list of exemptions is further articulated and supplemented by provisions of WAC 173-27-040, as amended.

- 115 a. Any development of which the total cost or fair market value, whichever is higher, is below
the threshold established by the SMA and any amendments to the SMA, if such development
does not materially interfere with the normal public use of the water or shoreline. The
substantial development dollar threshold applicable on the adoption date of this SMP is
\$7,047. Under current law, the dollar threshold will be recalculated by the Office of Financial
Management (OFM) every 5 years beginning on July 1st, 2007. OFM will post updated dollar
120 thresholds in the Washington State Register. See RCW 90.58.030(3)(e). The State Legislature
may change the dollar threshold at any time.
- b. Normal maintenance or repair of existing structures or developments, including damage by
accident, fire, or elements, when all of the conditions identified in WAC 173-27-040(2)(b)
apply.
- 125 c. Emergency construction necessary to protect property from damage by the elements. An
"emergency" is an unanticipated and imminent threat to public health, safety, or the
environment which requires immediate action within a time too short to allow full
compliance with the SMA or this SMP. Emergency construction does not include
development of new permanent protective structures where none previously existed. Where
130 new protective structures are deemed by the administrator to be the appropriate means to
address the emergency situation, upon abatement of the emergency situation the new
structure shall be removed or any permit which would have been required, absent an
emergency, pursuant to the SMA, the SMP Guidelines or this SMP, obtained. All emergency
construction shall be consistent with the policies of the SMA and this SMP. As a general
matter, flooding or other seasonal events that can be anticipated and may occur but that are
135 not imminent are not an emergency.
- d. Construction or modification of navigational aids (e.g., channel markers, anchor buoys, etc.).
- e. Construction on shorelands by an owner, lessee or contract purchaser of a single-family
residence for their own use or for the use of their family.
- 140 f. Construction of a dock, including a community dock, designed for pleasure craft only, for the
private noncommercial use of the owner, lessee, or contract purchaser of single-family and
multiple-family residences. A dock is a landing and moorage structure for watercraft and
does not include private leisure decks, storage facilities or other appurtenances. This
exemption applies if the fair market value of the dock does not exceed the threshold
established by the SMA, as amended.
- 145 g. Any project with certification from the Governor pursuant to Chapter 80.50 RCW.
- h. Site exploration and investigation activities that are prerequisite to preparation of an
application for development authorization when all of the conditions identified in WAC 173-
27-040(2)(m) apply.
- 150 i. The process of removing or controlling aquatic noxious weeds when all of the conditions
identified in RCW 17.26.020 apply.
- j. Watershed restoration projects when all of the conditions identified in WAC 173-27-040(2)(o)
apply.
- k. A public or private project that is designed to improve fish or wildlife habitat or fish passage,
when all of the conditions identified in WAC 173-27-040(2)(p) apply.

- 155 I. The external or internal retrofitting of an existing structure with the exclusive purpose of
compliance with the Americans with Disabilities Act of 1990 (42 USC Section 12101 et seq.)
or to otherwise provide physical access to the structure by individuals with disabilities.

2.5.2 *Statement of Exemption Process*

- 160 1. The burden of proof that a development or use is exempt from the need to obtain a SSDP is on
the applicant.
- 165 2. All exempt review activities, except for emergency development pursuant to WAC 173-27-
040(2)(d), require that a SoE be issued by the Shoreline Administrator, including activities which
have obtained a USACE Section 10 certification under the Rivers and Harbors Act of 1899, or a
Section 404 permit under the Federal Water Pollution Control Act of 1972.
- 170 3. At a minimum, applicants for a SoE shall provide a letter stating the applicable exemption under
WAC 173-27-040, describe why development proposed by the applicant qualifies for an
exemption, and include a statement of compliance with applicable sections of this SMP.
Information shall be provided that is sufficient for the Shoreline Administrator to determine if the
proposal will comply with the requirements of this SMP which, if necessary, may include project
site plan graphics, building elevation drawings, or special studies showing how the project meets
applicable sections of this SMP.
- 175 4. In authorizing a SoE, the City may be attach conditions to assure the project is consistent with all
applicable standards of the SMA and this SMP.
5. A notice of SoE shall be provided to the applicant and any party of record. Such notices shall also
be filed with Ecology, pursuant to the requirements of WAC 173-27-050.
6. The same measures used to calculate time periods for Shoreline Permits as set forth in WAC 173-
27-040(4) shall be used for SoEs.
7. A denial of an exemption shall be in writing and shall identify the reason(s) for the denial. The
Shoreline Administrator's decision on a SoE is not subject to administrative appeal.

180 2.6 Shoreline Substantial Development Permits

2.6.1 *Shoreline Substantial Development Permits – Purpose – Applicability – Criteria*

185 The purpose of a Shoreline Substantial Development Permit (SSDP) is to assure consistency with the
provisions of the SMA and this SMP. In authorizing a SSDP, the City may attach conditions to the
approval as necessary to assure the project is consistent with all applicable standards of the SMA and
this SMP. The following criteria shall assist in reviewing proposed SSDPs:

- 190 1. SSDPs may not be used to authorize any use that is listed as conditional or prohibited in a
shoreline designation.
2. SSDPs may not be used to authorize any development and/or use which does not conform to
the specific bulk, dimensional, and performance standards set forth in this SMP.
3. SSDPs may be used to authorize uses which are listed or set forth in this SMP as permitted uses.
- 195 4. To obtain a SSDP, the applicant must demonstrate compliance with all of the following review
criteria as listed in WAC 173.27.150:
a. That the proposal is consistent with the SMA;
b. That the proposal is consistent with WAC 173-27 – Shoreline Management Permit and
Enforcement Procedures; and

- c. That the proposal is consistent with this SMP and SMC 18.08 – Shoreline Management.

2.6.2 Substantial Development Permits – Permit Process

Proposals for SSDPs are subject to the City’s permit procedures articulated in SMC 18.08 – Shoreline Management and the State’s permit procedures articulated in WAC 173-27 – Shoreline Management Permit and Enforcement Procedures.

2.7 Shoreline Conditional Use Permits

2.7.1 Conditional Use Permits – Purpose – Applicability – Criteria

The purpose of a Shoreline Conditional Use Permit (SCUP) is to provide a system within the SMP which allows flexibility in the application of use regulations in a manner consistent with the policies of RCW 90.58.020. In authorizing a SCUP, special conditions may be attached to the permit by the City or by Ecology to prevent nuisances, hazards, and undesirable effects of the proposed use and/or to assure consistency of the project with the SMA and this SMP. The following criteria shall assist in reviewing proposed SCUPs:

1. SCUPs may not be used to authorize a use that is specifically prohibited in a shoreline designation.
2. SCUPs may be used to authorize uses which are listed or set forth in this SMP as conditional uses. SCUPs may be used to authorize uses which are unlisted or not set forth in this SMP provided the applicant can demonstrate consistency with the requirements of this section, SMP Section 5.4.13, and WAC 173-27-160.
3. In the granting of all SCUPs, consideration shall be given to the cumulative impact of additional requests for like actions in the area. For example if SCUPs were granted to other developments in the area where similar circumstances exist, the total of the conditional uses shall also remain consistent with the policies of RCW 90.58.020 and shall not cause substantial adverse effects to the shoreline environment.
4. To obtain a SCUP, the applicant must demonstrate compliance with all of the following review criteria as listed in WAC 173-27-160:
 - a. That the proposed use is consistent with the policies of RCW 90.58.020 and this SMP;
 - b. That the proposed use will not interfere with the normal public use of public shorelines;
 - c. That the proposed use of the site and design of the project is compatible with other authorized uses within the area and with uses planned for the area under the Comprehensive Plan and this SMP;
 - d. That the proposed use will cause no significant adverse effects to the shoreline environment in which it is to be located; and
 - e. That the public interest suffers no substantial detrimental effect.

2.7.2 Conditional Use Permits – Permit Process

Proposals for SCUPs are subject to the City’s permit procedures articulated in SMC 18.08 – Shoreline Management and the State’s permit procedures articulated in WAC 173-27 – Shoreline Management Permit and Enforcement Procedures.

2.8 Shoreline Variances

235 2.8.1 Variances – Purpose – Applicability – Criteria

The purpose of a Shoreline Variance (SVAR) is strictly limited to granting relief to specific bulk, dimensional, or performance standards set forth in this SMP where there are extraordinary or unique circumstances relating to the property such that the strict implementation of this SMP would impose unnecessary hardship on the applicant or thwart the policies set forth in the SMA. The following criteria shall assist in reviewing proposed SVARs:

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1. SVARs to the use regulations of this SMP are prohibited.
2. SVARs should be granted in circumstances where denial of the permit would result in a thwarting of the policies set forth in RCW 90.58.020. In all instances the applicant must demonstrate that extraordinary circumstances shall be shown and the public interest shall suffer no detrimental effect.

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3. In the granting of all SVARs, consideration shall be given to the cumulative impact of additional requests for like actions in the area. For example if variances were granted to other developments and/or uses in the area where similar circumstances exist, the total of the variances shall also remain consistent with the policies of RCW 90.58.020 and shall not cause substantial adverse effects to the shoreline environment.

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4. To obtain a SVAR for development and/or uses landward of the OHWM or wetland, the applicant must demonstrate compliance with the following review criteria as listed in WAC 173-27-170:

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- a. That the strict application of the bulk, dimensional, or performance standards set forth in this SMP precludes, or significantly interferes with, reasonable use of the property;
- b. That the hardship described in (a) above is specifically related to the property, and is the result of unique conditions (e.g., irregular lot shape, size, natural features, etc.) and the application of this SMP and not, for example, from deed restrictions or the applicant's own actions;
- c. That the design of the project is compatible with other authorized uses within the area and with uses planned for the area under the Comprehensive Plan and this SMP and will not cause adverse impacts to the shoreline environment;
- d. That the variance will not constitute a grant of special privilege not enjoyed by the other properties in the area;
- e. That the variance requested is the minimum necessary to afford relief; and
- f. That the public interest will suffer no substantial detrimental effect.

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5. To obtain a SVAR for development and/or uses waterward of the OHWM or within any wetland, the applicant must demonstrate compliance with the following review criteria as listed in WAC 173-27-170:

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- a. That the strict application of the bulk, dimensional, or performance standards set forth in this SMP precludes all reasonable use of the property;
- b. That the proposal is consistent with the criteria established in 4(b) through (f) above; and
- c. That the public rights of navigation and use of the shorelines will not be adversely affected.

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2.8.2 Variances – Permit Process

275 Proposals for SVARs are subject to the City’s permit procedures articulated in SMC 18.08 – Shoreline
Management and the State’s permit procedures articulated in WAC 173-27 – Shoreline Management
Permit and Enforcement Procedures.

2.9 Nonconforming Use & Development

2.9.1 Nonconforming Use & Development – Purpose – Applicability – Criteria

280 The purpose of nonconforming use and development provisions is to recognize uses and development
that have previously been established within shoreline jurisdiction. Where those uses & development
were lawfully established according to the standards in place prior to the effective date of this SMP,
these provisions are intended to allow the use or development to continue— or be “grandfathered”—
until a later date when conformity to this SMP can be achieved. The following policies shall assist in
reviewing proposals involving nonconforming use and/or development:

- 285 1. Nonconforming Use is defined herein.
2. Nonconforming uses and developments on Stevenson’s shorelines shall meet the standards of
the City of Stevenson Zoning Code, SMC 17.44 – Nonconforming Uses, with the following
exceptions:
- 290 a. A building or structure conforming as to use but nonconforming as to the shoreline setback,
critical area buffer, and/or height provisions of the environment designation in which said
building or structure is located may be maintained, repaired, or altered by expansion or
enlargement, provided, that the alteration meets all applicable provisions of this SMP and
does not further exceed or violate the appropriate shoreline setback, critical area buffer, and
height provisions. (For example, a building or structure encroaching in a shoreline setback
295 area shall not further encroach into the shoreline setback area as a result of the alteration.)
- b. For the purposes of this SMP, any strengthening or restoring to a safe condition permitted
under SMC 17.44.090(B) shall not further exceed or violate the appropriate shoreline bulk or
dimensional standards of this SMP.
- 300 c. Proposed uses and structures that are appurtenant or accessory to nonconforming dwelling
units must conform to all applicable requirements of this SMP.
- d. A structure for which a shoreline variance (SVAR) has been issued shall be considered a legal
nonconforming structure and the requirements of this section shall apply as they apply to
preexisting nonconformities.
- 305 e. A structure that is being or has been used for a nonconforming use may be used for a
different nonconforming use only upon the approval of a SCUP. A SCUP may be approved
only upon a finding that:
- i. No reasonable alternative conforming use is practical; and
 - ii. The proposed use will be at least as consistent with the policies and provisions of the
SMA and this SMP and as compatible with the uses in the area as the preexisting
310 use.
- f. A nonconforming structure which is moved any distance must be brought into conformance
with this SMP and the SMA unless a SVAR is approved.

- 315 g. For the purposes of this SMP, SMC 17.44.100 applies; provided, that application is made for
the permits necessary to restore the structure within one year of the date the damage
occurred, all permits are obtained, and that the restoration is completed within 2 years of
320 permit issuance.

2.10 Shoreline Permit Revisions

320 A permit revision is required whenever the applicant proposes substantive changes to the design,
terms or conditions of a project from that which is approved in the permit. Changes are substantive if
they materially alter the project in a manner that relates to its conformance to the terms and
conditions of the permit, this SMP and/or the policies and provisions of Chapter 90.58 RCW. Changes
which are not substantive in effect do not require approval of a revision and may be authorized
through a Statement of Exemption. When a revision of a Shoreline Permit is sought, the applicant shall
submit detailed plans and text describing the proposed changes and must demonstrate compliance
325 with the following guidelines and standards as articulated in WAC 173-27-100:

- 330 1. If the City determines that the proposed changes are within the scope and intent of the original
permit, and are consistent with this SMP and the SMA, the City may approve a revision.
2. "Within the scope and intent of the original permit" means all of the following:
 - 335 a. No additional over water construction is involved except that pier, dock, or float construction
may be increased by 500 square feet or 10% from the provisions of the original permit,
whichever is less;
 - b. Ground area coverage and height may be increased a maximum of 10% from the provisions
of the original permit;
 - 340 c. The revised permit does not authorize development to exceed height, lot coverage, setback,
or any other requirements of this SMP except as authorized under a variance granted as the
original permit or part thereof;
 - d. Additional revised landscaping is consistent with any conditions attached to the original
permit and with this SMP;
 - e. The use authorized pursuant to the original permit is not changed; and
 - f. No adverse environmental impact will be caused by the project revision.
- 345 3. Revisions to permits that have already expired (RCW 90.58.143) may be allowed only if the
changes:
 - a. Are consistent with this section;
 - b. Would not otherwise require a Shoreline Permit per the SMA, WAC 173-27-100, or this SMP.
If the proposed change constitutes substantial development then a new permit is required;
and
 - c. The revision does not extend the time requirements of the original permit or authorize
substantial development beyond the time limits of the original permit.
- 350 4. If the revision, or the sum of the revision and any previously approved revisions, cannot satisfy all
the provisions itemized in subsection 2 of this section, the applicant shall be required to apply for
a new Shoreline Permit.
5. Revision approval, including revised site plans and text necessary to clearly indicate the
authorized changes and the final consistency ruling, shall be subject to the notice and filing

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procedures of SMC 18.08.190; provided, that the timelines stated in WAC 173-27-100 are to be followed in the event of any discrepancy.

6. The revised permit is effective immediately upon final decision by the City or, when appropriate, upon final action by Ecology.
7. Appeals to permit revisions shall be in accordance with SMC 18.08.200 and shall be based only upon contentions of noncompliance with the provisions of subsection 2 of this section.

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Construction undertaken pursuant to that portion of a revised permit not authorized under the original permit is at the applicant's own risk until the expiration of the appeals deadline. If an appeal is successful in proving that a revision is not within the scope and intent of the original permit, the decision shall have no bearing on the original permit.

DRAFT

Chapter 3 – Shoreline Environment Designation Provisions

3.1 Introduction

The state SMP guidelines require that Shoreline Environment Designations be assigned to shoreline areas according to their function, existing land uses, and the goals and aspirations of the community. For those unfamiliar with the Shoreline Management Act (SMA), a Shoreline Environment Designation (SED) is similar to the more common concept of a zoning district. Consistent with the City's requirements under the SMA, this chapter provides a system SEDs which mirror those outlined in the SMP guidelines and overlay other zoning district requirements. The locations of the City's SEDs are described in and depicted on the map of shoreline jurisdiction and environment designations in Appendix A.

3.2 Environment Designations

3.2.1 Aquatic Environment

1. Purpose: The purpose of the Aquatic Environment is to protect, restore, and manage the unique characteristics and resources of the areas waterward of the Ordinary High-Water Mark (OHWM).
2. Location Criteria: The Aquatic SED may only apply to lands waterward of the OHWM and wetlands.
3. Management Policies:
 - a. Allow new overwater structures only for water-dependent uses, public access, or ecological restoration.
 - b. Limit the size of new overwater structures to the minimum necessary to support the structure's intended use.
 - c. Encourage multiple use of overwater facilities to reduce the impacts of shoreline development and increase effective use of water resources.
 - d. Locate and design all developments and uses on navigable waters or their beds to i) minimize interference with surface navigation, ii) consider impacts to public views, iii) allow for the safe, unobstructed passage of fish and wildlife, particularly those species dependent on migration.
 - e. Limit uses that adversely impact the ecological functions of critical freshwater habitats, except where necessary to achieve the objectives of RCW 90.58.020, and then only when their impacts are mitigated according to the sequence described in WAC 173-26-201(2)(e) as necessary to assure no net loss of ecological functions.
 - f. Design and manage shoreline uses and modifications to prevent degradation of water quality and alteration of natural hydrographic conditions.
 - g. Reserve shoreline space for preferred uses. Such planning should consider upland and in-water uses, water quality, navigation, presence of aquatic vegetation, existing shellfish protection districts and critical habitats, aesthetics, public access and views.

3.2.2 *Natural Environment*

1. Purpose: The purpose of the Natural Environment 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 systems require that only very low intensity uses be allowed in order to maintain the ecological functions and ecosystem-wide processes. Consistent with the policies of this designation, the City should include planning for restoration of degraded shorelines within this environment.
2. Location Criteria:
 - a. The Natural SED may apply to shorelands that:
 - i. Are ecologically intact and therefore currently performing an important, irreplaceable function or ecosystem-wide process that would be damaged by human activity;
 - ii. Is considered to represent ecosystems and geologic types that are of particular scientific and educational interest; or
 - iii. Is unable to support new development or uses without significant adverse impacts to ecological functions or risk to human safety.
 - b. The Natural SED may not apply to shorelands with significant existing agricultural lands, except where the existing agricultural activities involve very low intensity uses where there is no significant impact on natural ecological functions, and where the intensity or impacts associated with such agricultural activities is unlikely to expand in a manner inconsistent with the Natural SED.
3. Management Policies:
 - a. Prohibit any use that would substantially degrade the ecological functions or natural character of the shoreline area.
 - b. Prohibit the following new uses:
 - i. Commercial uses.
 - ii. Industrial Uses.
 - iii. Non-water-oriented recreation.
 - iv. Roads, utility corridors, and parking areas that can be located outside of the Natural SED.
 - c. Prohibit new development or significant vegetation removal that would reduce the capability of vegetation to perform normal ecological functions. This includes subdivision of property in a configuration that, to achieve its intended purpose, will require significant vegetation removal or shoreline modification that adversely impacts ecological functions. That is, each new parcel must be able to support its intended development without significant ecological impacts to the shoreline ecological functions.
 - d. Allow single-family residential development as a conditional use when the density and intensity of such use is limited as necessary to protect ecological functions and consistent with the purpose of this SED.
 - e. Allow commercial forestry as a conditional use provided it meets the State Forest Practices Act and its implementing rules and is conducted in a manner consistent with the purpose of this SED.

- 80 f. Allow agricultural uses of a very low intensity nature consistent with this SED when such use is subject to appropriate limitations or conditions to assure that the use does not expand or alter practices in a manner inconsistent with the purpose of this SED.
- g. Allow scientific, historical, cultural, educational research uses, and low-intensity water-oriented recreational access uses provided that no significant ecological impact on the area will result.

85 **3.2.3 Shoreline Residential Environment**

1. Purpose: The purpose of the Shoreline Residential Environment is to accommodate residential development and appurtenant structures that are consistent with this WAC 173-26. An additional purpose is to provide appropriate public access and recreational uses.
- 90 2. Location Criteria: The Shoreline Residential SED may apply to shorelands that have predominantly single-family or multi-family residential development or are planned and platted for residential development.
3. Management Policies:
- 95 a. Set standards for density or minimum frontage width, setbacks, lot coverage limitations, buffers, shoreline stabilization, vegetation conservation, critical area protection, and water quality to assure no net loss of shoreline ecological functions, taking into account the environmental limitations and sensitivity of the shoreline area, the level of infrastructure and services available, and other comprehensive planning considerations.
- b. Require multi-family and multi-lot residential and recreational developments to provide public access and joint use for community recreational facilities.
- 100 c. Ensure access, utilities, and public services are available to serve existing needs and/or planned future development.
- d. Limit commercial development to water-oriented uses.

3.2.4 Urban Conservancy Environment

- 105 1. Purpose: The purpose of the Urban Conservancy Environment is to protect and restore ecological functions of open space, flood plain and other sensitive lands where they exist in urban and developed settings, while allowing a variety of compatible uses.
2. Location Criteria: The Urban Conservancy SED may apply to shorelands that 1) are suitable for water-related or water-enjoyment uses; 2) are open space, flood plain or other sensitive areas that should not be more intensively developed; 3) have potential for ecological restoration; 4) retain important ecological functions, even though partially developed, or 5) have the potential for development that is compatible with ecological restoration.
- 110 3. Management Policies:
- a. Primarily allow uses that preserve the natural character of the area or promote preservation of open space, flood plain or sensitive lands either directly or over the long term. Uses that result in restoration of ecological functions should be allowed if the use is otherwise compatible with the purpose of the environment and setting.
- 115 b. Ensure that new development does not result in a net loss of ecological functions or future degrade other shoreline values through established standards for shoreline stabilization

measures, vegetation conservation, water quality, and shoreline modifications within the Urban Conservancy SED.

- c. Implement public access and public recreation objectives whenever feasible and whenever significant ecological impacts can be mitigated.
- d. Give priority to water-oriented uses over nonwater-oriented uses. For shoreline areas adjacent to commercially navigable waters, water-dependent uses should be given highest priority.

3.2.5 Active Waterfront Environment

1. Purpose: The purpose of the Active Waterfront Environment is to recognize the existing pattern of mixed-use development and to accommodate new water-oriented commercial, transportation, recreation, and industrial uses while protecting existing ecological functions of open space, floodplain, and other sensitive lands and restoring ecological functions in areas that have been previously degraded.
2. Location Criteria: The Active Waterfront SED may apply to shorelands that 1) currently support or 2) are appropriate and planned for water-oriented commercial, transportation, recreation, and industrial development that is compatible with protecting or restoring of the ecological functions of the area.
3. Management Policies:
 - a. Prefer uses that preserve the natural character of the area or promote preservation of open spaces and sensitive lands, either directly or over the long term. Allow uses that result in restoration of ecological functions if the use is otherwise compatible with the purpose of the environment and the setting.
 - b. Give priority to water-oriented uses, with first priority to water-dependent, then second priority to water-related and water-enjoyment uses. For shoreline areas adjacent to commercially navigable waters, give highest priority to water-dependent uses.
 - c. Prohibit new non-water-oriented uses, except:
 - i. As part of mixed use development;
 - ii. In limited situations where they do not conflict with or limit opportunities for water-oriented uses;
 - iii. On sites where there is no direct access to the shoreline;
 - iv. As part of a proposal that result in a disproportionately high amount of restoration of ecological functions.
 - d. Assure no net loss of shoreline ecological functions as a result of new development through shoreline policies and regulations. Where applicable, new development shall include environmental cleanup and restoration of the shoreline to comply in accordance with any relevant state and federal law.
 - e. Require public visual and physical access and implement public recreation objectives whenever feasible and where significant ecological impacts can be mitigated.

Chapter 4 – General Provisions for All Shoreline Activities

4.1 Introduction

5 The provisions of this section apply generally to all review activities in shoreline jurisdiction without regard to environment designation, as appropriate. For example, all sites that contain critical areas or archaeological resources where a review activity is proposed are required to meet the corresponding sections of this chapter. These provisions address certain elements as required by RCW 90.58.100(2) and implement the principles as established in WAC 173-26-186.

4.2 Cultural Resources

4.2.1 Applicability

10 All sites which contain documented archaeological, cultural, and historic resources that are either recorded at the state historic preservation office and/or by the City, have been identified in consultation with a Tribal Historic Preservation Officer, or have been discovered inadvertently during development are subject to the provisions of this section. In addition to complying with the provisions of this chapter, archaeological sites are subject to RCW Chapter 27.44 (Indian Graves and Records) and 15 RCW Chapter 27.53 (Archaeological Sites and Records). Developments or uses that may impact archaeological sites are subject to WAC Chapter 25-48.

4.2.2 Policies

1. Archaeological, cultural, or historic sites should be protected from the impacts of development proposed within the shoreline due to the limited and irreplaceable nature of these resources.
- 20 2. Protection of archaeological, cultural, and historic resources should occur in collaboration with appropriate, tribal, state, federal and local governments. Cooperation among public and private parties is encouraged for the identification, protection and management of such resources.
3. Any proposed site development and/or associated site demolition work should be planned and carried out to avoid impacts to archaeological, cultural, and historic resources.
- 25 4. Owners of property containing previously identified archaeological, cultural, or historic sites are encouraged to coordinate with the City and other appropriate agencies well before permit application. The intent is to allow these parties ample time to assess the site and make arrangements to preserve archaeological, cultural, and historic sites as applicable. These parties include the Yakama, Nez Perce, Warm Springs, Umatilla, and Cowlitz tribes, the Washington State Department of Archaeology and Historic Preservation (DAHP), and others.
- 30 5. If development or demolition is proposed adjacent to an identified archaeological, cultural, or historic site, then the proposed development should be designed and operated to be compatible with continued protection of the archaeological, cultural, or historic resource.

4.2.3 Regulations

- 35 1. Site Inspections, Evaluations, and Surveys – Required When:
 - a. When a shoreline use or development is within 500 feet of an area documented to contain, or likely to contain, archaeological, cultural, or historic resources based on information from DAHP, or a prior archaeological report/survey, or based on a state or federal register, the

- 40 applicant shall provide a site inspection and evaluation report prepared by a professional
archaeologist prior to issuance of any Shoreline Permit or approval, including a Shoreline
Statement of Exemption. Work may not begin until the inspection and evaluation have been
completed, and the City has issued its permit or approval.
- 45 b. An archaeological survey may be required to be conducted based on the recommendations
of an archaeologist contained in the site inspection and evaluation report. Any
archaeological survey shall conform to DAHP's survey and reporting standards.
2. Cultural Resources Avoidance. If an archaeological site inspection or evaluation identifies the
presence of significant archaeological, cultural, or historic resources at the site, the applicant shall
first seek to avoid impacts to the resource.
3. Cultural Resources Management Plan. If an archaeological site inspection or evaluation identifies
50 the presence of significant archaeological, cultural, or historic resources that will be impacted by
a project and if recommended by an archaeologist, a cultural resource management plan shall be
prepared prior to the City's approval of the project. A professional archaeologist and/or historic
preservation management professional, as appropriate, shall prepare the cultural resource
management plan. Cultural resource management plans at a minimum shall conform to DAHP's
55 current standards. In addition, a permit or other requirement administered by DAHP pursuant to
RCW 27.44 and RCW 27.53 may apply. If the archaeologist determines that impacts to an
archaeological, cultural, or historic resource can be adequately avoided by establishing a work
limit area within which no project work or ground disturbance may occur, then a cultural
resources management plan is not required.
- 60 4. Inadvertent discovery. If any item of possible archaeological interest (including human skeletal
remains) is discovered on site during construction or site work, all the following steps shall occur:
- a. Stop all work in the immediate area (initially allowing for a 100' buffer, this number may vary
by circumstance) immediately;
- 65 b. Implement reasonable measures to protect the discovery site, including any appropriate
stabilization or covering;
- c. Take reasonable steps to ensure the confidentiality of the discovery site;
- d. Take reasonable steps to restrict access to the site of discovery;
- e. Notify the City, DAHP, and Yakama, Nez Perce, Warm Springs, Umatilla, and Cowlitz tribes of
the discovery.
- 70 f. A stop-work order will be issued.
- g. The Shoreline Permit will be temporarily suspended.
- h. All applicable state and federal permits shall be secured prior to commencement of the
activities they regulate and as a condition for resumption of development activities.
- i. Development activities may resume only upon receipt of City approval.
- 75 j. If the discovery includes human skeletal remains, the Skamania County Coroner and local law
enforcement shall be notified in the most expeditious manner possible. The County Coroner
will assume jurisdiction over the site and the human skeletal remains, and will make a
determination of whether they are crime-related. If they are not, DAHP will take jurisdiction
over the remains and report them to the appropriate parties. The State Physical
80 Anthropologist will make a determination of whether the remains are Native American and

report that finding to the affected parties. DAHP will handle all consultation with the affected parties as to the preservation, excavation, and disposition of the remains.

4.3 Environmental Protection & No Net Loss

4.3.1 Policies

1. Uses, developments, and modifications on Stevenson’s shorelines should be designed, located, sized, constructed and maintained to achieve no net loss of shoreline ecological functions necessary to sustain shoreline natural resources.
2. New uses and developments should not have an unmitigated adverse impact on other shoreline functions fostered by this SMP.

4.3.2 Regulations

1. Mitigation Sequence. In order to ensure that review activities contribute to meeting the no net loss provisions by avoiding, minimizing, and mitigating for adverse impacts to ecological functions or ecosystem-wide processes, applicants shall describe how the proposal will follow the sequence of mitigation as defined below:
 - a. Avoid the impact altogether by not taking a certain action or parts of an action;
 - b. Minimize the impacts by limiting the degree or magnitude of the action and its implementation by using appropriate technology or by taking affirmative steps (e.g., project redesign, relocation, timing to avoid or reduce impacts, etc.);
 - c. Rectify the impact by repairing, rehabilitating, or restoring the affected environment to the conditions existing at the time of the initiation of the project or activity;
 - d. Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action;
 - e. Compensate for the impact by replacing, enhancing, or providing substitute resources or environments; and
 - f. Monitor the impact and the compensation projects and take remedial or corrective measures when necessary.
2. The mitigation sequence is listed in the order of priority. Applicants shall consider and apply lower priority measures only where higher priority measures are determined to be infeasible or inapplicable.
3. SEPA Compliance. To the extent SEPA applies to a proposal, the analysis of environmental impacts and mitigation related to the proposal shall be conducted consistent with WAC 197-11—SEPA Rules and SMC 18.04—Environmental Policy.
4. Cumulative Impacts. As part of the assessment of environmental impacts subject to this SMP, new uses, developments, and modifications shall evaluate and consider cumulative impacts of reasonably foreseeable future development on shoreline ecological functions. Evaluation of cumulative impacts shall consider:
 - a. Current circumstances affecting the shorelines and relevant natural processes;
 - b. Reasonably foreseeable future development and use of the shoreline; and
 - c. Beneficial effects of any established regulatory programs under other local, state, and federal laws.

5. Mitigating for Impacts. When impacts related to a proposal require mitigation, the following shall apply:
- a. The proposal shall achieve no net loss of ecological functions.
 - b. The City shall not require mitigation in excess of that necessary to assure the proposal 1) results in no net loss of ecological function and 2) does not have a significant adverse impact on other shoreline functions fostered by this SMP.
 - c. Compensatory mitigation shall give preference to measures that replace the impacted function directly and in the immediate vicinity of the impact. However, alternative compensatory mitigation identified in the Restoration Plan or within the watershed that addresses limiting factors or identified critical needs for shoreline resource conservation may be authorized.
 - d. Unless waived by the City, authorization of compensatory mitigation shall require appropriate safeguards, terms or conditions (e.g. performance bonding, monitoring, conservation covenants) as approved by the City Attorney and necessary to ensure no net loss of ecological functions.

4.4 Critical Areas

4.4.1 Applicability

1. The provisions of SMC Chapter 18.13 – Critical Areas and Natural Resource Lands apply within shoreline jurisdiction. Said provisions include all amendments adopted through October 1st, 2018, the effective date of Ordinance 2018-1123.
2. These provisions apply to all lands and all review activities in shoreline jurisdiction, whether or not a Shoreline Permit or authorization is required.
3. These provisions apply to all persons proposing a review activity on shoreline properties containing or likely to affect critical areas (i.e., wetlands, geologic hazards, flood hazards, critical aquifer recharge areas, and fish and wildlife habitat conservation areas) or their buffers, unless the proposed activity and its effects lie wholly outside any critical area or buffer.
4. This section supplements SMC 18.13 provisions for Fish & Wildlife Habitat Conservation Areas and Wetlands
5. Where the regulations of SMC 18.13 conflict with the regulations of this SMP, this SMP shall prevail.

4.4.2 Policies

The Critical Areas protections of this SMP should:

1. Implement all applicable provisions of SMC 18.13 – Critical Areas and Natural Resource Lands. The review of critical areas provisions should be conducted in concert with the review of shoreline provisions, and proposals should be subject to a single application, fee, and permit.
2. Protect critical areas, as defined by this SMP and consistent with the SMA and RCW 36.70A.170 and 36.70A.050, to meet no net loss for the functions (e.g., water quality; flood hazard reduction; habitat; endangered, threatened and sensitive species protection; water supply; erosion control, etc.) and values (e.g., recreation; aesthetic enjoyment; prevention of property and habitat damage; preservation of natural character, etc.) they provide to humans and the environment.

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3. Protect critical freshwater habitats (i.e., streams, rivers, wetlands, and lakes, their associated channel migration zones (CMZs), hyporheic zones, and floodplains) consistent with WAC 173-26-221(2)(c)(iv). The standard critical area categories designated and protected by the City overlap to a large extent with critical freshwater habitats. Protections for critical areas are also protections for critical freshwater habitats.
 4. Promote appropriate human uses of critical areas within shoreline jurisdiction, which further the objectives of the SMA, and which are compatible with the protection of critical areas (e.g., public access and low-intensity recreational uses).
 5. Establish riparian area buffers based upon the performance of functions occurring at the reach-scale for the shoreline in question. This may lead to base buffer widths that are greater or lesser than the standard identified in SMC Table 18.13.095-1. Despite any reduced base buffer, significant trees and Oregon White Oak trees within shoreline jurisdiction shall be managed consistent with SMP Section 6.4.1.

4.4.3 General Critical Area Regulations

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1. The City of Stevenson shall not issue any Shoreline Permit (i.e., SSDP, SCUP, shoreline variance) or Statement of Exemption, or otherwise issue any authorization to alter the condition of any land, water, or vegetation, or to construct or alter any structure or improvement in, over, or on a shoreline critical area or associated buffer, without first assuring compliance with the requirements of this section and SMC 18.13, as applicable.
 2. Early Disclosure and Verification. When an applicant submits an application for any development proposal, it shall indicate whether any critical areas or buffers are located on or within 300 feet of the site. The presence of critical areas may require additional studies and time for review. However, the City shall review proposals involving critical areas protection under a single application, timeline, fee, and permit as the required Shoreline Permit or Statement of Exemption. Early disclosure of critical areas will reduce delays during the permit review process. If the applicant states there are no known critical areas, the City should review and confirm whether critical areas exist, and, if critical areas are present, require the applicant to complete a critical areas report.
 3. Studies generated as part other federal or state permit processes (e.g., SEPA submittals, biological opinions, biological evaluations, etc.) shall be provided and may be determined by the Administrator as adequate to satisfy the critical areas report requirements of this SMP if the project has been developed in enough detail to have evaluated site-specific impacts and mitigation measures.

4.4.4 Fish & Wildlife Habitat Conservation Area Regulations

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1. Any use or development proposed within or adjacent to an FWHCA with which state or federally endangered, threatened, or sensitive species have a primary association, shall ensure the FWHCA is protected as required by this SMP. If the Shoreline Administrator determines that a proposal is likely to impact an FWHCA adversely, additional protective measures (e.g., protective buffer standards, mitigation, and monitoring programs under SMC 18.13) may be required.

- 200 2. Applicants shall provide a preliminary FWHCA assessment for all proposals involving riparian
areas. The assessment must establish and/or confirm the base buffer necessary to ensure no net
loss of ecological functions occurring at the reach-scale for the riparian area in question.
- 205 3. The City or its qualified professional biologist shall condition the approval of activities located in
the FWHCA or its buffer as necessary. Approval conditions shall require the applicant to mitigate
any potential adverse impacts according to the approved critical area report, mitigation, and
monitoring plans.
- 210 4. Structures that prevent the migration of salmonids shall not be allowed in the portion of water
bodies currently or historically used by anadromous fish. Fish bypass facilities shall be provided,
as necessary, to allow the upstream and downstream migration of all salmonid life stages and
shall prevent juveniles migrating downstream from being trapped or harmed.

4.4.6 *Wetlands Regulations*

- 215 1. No net loss of wetland functions and values shall occur as a result of the overall project. Only
unavoidable wetland impacts will be authorized. In addition to the requirements in SMP Section
4.3, the following mitigation measures to minimize and reduce wetland impacts shall be required:
- 220 a. Mitigation shall achieve equivalent or greater biological functions.
b. Mitigation actions shall rely on the order of preference in SMC 18.13.100, however, wetland
preservation alone shall not be considered as achieving the no net loss standard of this SMP.
- 225 2. Permitted Alterations in High Value Wetlands. Prior to approval of any Shoreline Permit in
Category I or II wetlands or their buffers, the City shall verify that:
- a. The proposed project involves water-oriented activities, including public physical access.
b. The mitigation for impacts shall preferably be within the same wetland or wetland buffer, but
if that is not feasible given the size or scale of the water-oriented use, then mitigation occurs
in accordance with SMC 18.13.100 and this section.
c. The basic project purpose cannot reasonably be accomplished and successfully avoid, or
result in less adverse impacts on a wetland or its buffer using other design techniques,
project location or configuration on the same project site.

4.5 **Flood Hazard Reduction**

4.5.1 *Applicability*

- 230 1. The provisions of this section apply in addition to the regulations for frequently flooded areas in
SMC 18.13 and the critical areas protections above.
2. The provisions of this section apply to all Frequently Flooded Areas designated in SMC 18.13 and
all preliminary channel migration zones (pCMZs) mapped in ICR Appendix C.0.

4.5.2 *Policies*

- 235 1. Limit new uses and development in flood hazard and channel migration zone (CMZ) areas and
avoid impacting CMZs where alternatives for avoidance exist. Development in the CMZ has the
potential to impact downstream properties by affecting the path and intensity of flooding
downstream. In addition, development in the CMZ can lead to net loss of ecological functions.

- 240 2. Encourage removal of artificial restrictions (e.g., dams, shoreline stabilization, channel barriers, etc.) where hydrologic studies indicate that it would be possible to do so without negatively impacting public safety, property, or structures.

4.5.3 *Frequently Flooded Area and CMZ Regulations*

- 245 1. New or enlarged structural flood hazard reduction measures shall be allowed only by a shoreline conditional use permit and only when:
- a. It can be demonstrated by a scientific and engineering analysis that they are necessary to protect existing development;
 - b. That nonstructural measures are not feasible;
 - c. Impacts to ecological functions and priority species and habitats can be successfully mitigated so as to ensure no net loss; and
 - d. Vegetation standards consistent with SMP Section 6.4.1 are implemented.
- 250 2. New publicly funded dikes or levees shall dedicate and improve public access to the shoreline. This requirement may be waived if public access improvements would cause:
- a. Unavoidable health or safety hazards to the public;
 - b. Inherent and unavoidable security problems;
 - c. Unacceptable and unmitigable significant ecological impacts,
 - d. Unavoidable conflict with the proposed use; or
 - e. A cost that is disproportionate and unreasonable to the total long-term cost of the development.
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Critical Area Report – Channel Migration Zones

- 260 3. Review activities proposed within a pCMZ, as mapped in ICR Appendix C.0, should first seek to relocate to an area outside of the pCMZ.
- 265 4. For proposals which are not relocated to an area outside of a mapped pCMZ, applicants shall prepare a CMZ desk analysis report. The Administrator may waive this requirement after consultation with resource management agencies (e.g., WDFW, WDNR, etc.) to determine its necessity. A CMZ desk analysis report shall be prepared by a qualified professional hydrogeologist/hydrologist and shall consider the following after reviewing aerial photos, maps, GIS, LiDAR data and/or USGS topographic maps:
- a. Whether channel movement has occurred between aerial photo/data acquisition years.
 - b. Whether valley confinement is present. If the valley floor is significantly wider than the channel, migration may be occurring. If the valley floor is very narrow as compared with the width of the stream/river channel (less than twice as wide as the channel), it is unlikely channel migration is occurring.
 - c. Whether any of the following are present in reviewing aerial photographs: side channels, large gravel bars, eroding banks, new channels occurring between photo years (avulsion), multiple channels (braiding), wood jams, and/or high sinuosity or sharp channel bends.
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- 275 5. If the desk analysis report determines that a CMZ is not likely to be present at the proposal site based on a review of aerial photos maps, GIS and/or LiDAR data then no field assessment is required.
6. If the desk analysis report determines that channel migration is likely to be present at the project site based on the factors above, a field assessment report prepared by a qualified professional is

- 280 required to confirm the presence of a CMZ, and field observations shall be documented in the
report. Field observation findings shall include:
- a. Date of the site visit;
 - b. Who conducted the field review and their title/position;
 - c. Distance of channel walked;
 - 285 d. Length of CMZ boundary delineated;
 - e. Presence of avulsion hazard and/or erosion hazard areas;
 - f. Description of method(s) used to determine CMZ presence, CMZ outer edge delineation and
marking (flagging, paint, etc.);
 - g. Other applicable information.

290 **Channel Migration Zone Standards**

7. When development is proposed in a CMZ, the applicant shall obtain a flood certificate
demonstrating whether the proposed development is within the flood hazard area and, if so, is
required to comply with all applicable CMZ provisions in this SMP.
8. Hydrogeomorphological study shall be performed for all proposals within a CMZ demonstrating
295 that the proposal does not cause significant impacts to adjacent or downstream properties.

4.6 Public Access

4.6.1 *Applicability*

Public access includes the ability of the general public to reach, touch, and enjoy the water's edge, to
travel on the waters of the state, and to view the water and the shoreline from adjacent locations. All
300 properties within shoreline jurisdiction have the potential to protect or enhance public access in some
form, and all proposed review activities on shorelines are subject to the following policies and
regulations.

4.6.2 *Policies*

1. Continuous public pedestrian access should be provided along the City's shorelines, especially
305 the Columbia River, Rock Cove, and Lower Rock Creek.
2. The system of public physical and visual access to Stevenson's shorelines should be maintained,
enhanced, and protected over time on both private and public lands.
3. Public access and recreational facilities should be located in a manner that will preserve the
natural characteristics and functions of the shoreline.
- 310 4. Private property rights, public safety, and navigational rights should be considered when
providing public access opportunities.
5. New development should identify and preserve key shoreline views and avoid such views from
public areas.
6. The City's should develop a comprehensive and integrated public access and trail plan
315 (consistent with WAC 173-26-221(4)) that identifies specific public access needs and
opportunities to replace these site-by-site requirements. Such plan should identify a preference
for pervious over impervious surfaces, where feasible.

4.6.3 Regulations

- 320 1. Consistent with legal/constitutional limitations, provisions for adequate public access shall be incorporated into all proposals for Shoreline Permits that have one or more of the following characteristics:
- 325 a. The proposed development or use will create a demand for, or increase demand for public access;
- b. The proposed use is not water-dependent and is not a preferred use under the SMA;
- 330 c. The proposed use involves the subdivision of land into 5 or more parcels;
- d. The proposed development or use will interfere with existing access by blocking access or discouraging use of existing access;
- e. The proposed development or use will interfere with public use of waters of the state;
- f. The proposed development or use will involve public funding or occur on public lands, provided that such access would not result in a net loss of ecological function. Public funding includes any funds from federal, state, municipal or local taxation districts.
- 335 2. Additional public access will not be required where suitable public access is already provided by an existing public facility on or adjacent to the site and the Planning Commission makes a finding that the proposed development would not negatively impact existing visual or physical public access nor create a demand for shoreline public access that could not be accommodated by the existing public access system and existing public recreational facilities in the immediate vicinity.
- 340 3. Public access will not be required where the applicant demonstrates it is infeasible due to at least one of the following:
- a. Unavoidable health or safety hazards to the public exist that cannot be prevented by any practical means;
- b. Inherent security requirements of the use cannot be satisfied through the application of alternative design features or other solutions;
- 345 c. The cost of providing the access, easement, or an alternative amenity are unreasonably disproportionate to the total long-term cost of the proposed development or other legal/constitutional limitations preclude public access;
- d. Unacceptable environmental harm will result from the public access which cannot be mitigated;
- 350 e. Significant unavoidable conflict between the proposed access and adjacent uses would occur and cannot be mitigated.
- 355 4. To meet any of the conditions under Regulation 3 above, the applicant must first demonstrate to the satisfaction of the Planning Commission that all reasonable alternatives have been exhausted including, but not limited to, the following:
- a. Regulating access by such means as maintaining a gate and/or limiting hours of use;
- b. Designing separation of uses and activities (e.g., fences, terracing, use of one-way glazings, hedges, landscaping);
- c. Provisions for access at a site geographically separated from the proposal such as a street end, vista or trail system;
- 360 d. Sharing the cost of providing and maintaining public access between public and private entities.

5. For projects that meet the criteria of Regulation 3 above, the City may consider off-site public access or, if approved by the Planning Commission and agreed to by the applicant, the applicant may contribute a proportional fee to the local public access fund (payment in lieu).
- 365 6. If the City determines that public access is required pursuant to Regulation 1 above, the City shall impose permit conditions requiring the provision of public access that is roughly proportional to the impacts caused by the proposed development or use. The City shall demonstrate in its permit decision document that any such public access has a nexus with the impacts of the proposed development and is consistent with the rough proportionality standard.
- 370 7. When required, public access shall:
- 375 a. Consist of a dedication of land or a physical improvement in the form of a walkway, trail, bikeway, corridor, viewpoint, park, deck, observation tower, pier, boat launch, dock or pier area, or other area serving as a means of view and/or physical approach to public waters and may include interpretive centers and displays, view easements, and/or decreased building bulk through height, setback, or façade limitations;
 - 380 b. Include features for protecting adjacent properties from trespass and other possible adverse impacts;
 - 385 c. Be fully developed and available for public use at the time of occupancy of the proposed use or activity;
 - 390 d. Result in no net loss of shoreline ecological functions.
- 380 8. When required, physical public access shall be constructed to meet the following requirements for location, design, operation and maintenance:
- 385 a. Public access sites shall be connected directly to the nearest public street or non-motorized trail through a parcel boundary, tract, or easement, wherever feasible;
 - 390 b. Signs indicating the public's right of access to shoreline areas shall be installed and maintained in conspicuous locations.
 - 395 c. Public access easements and permit conditions shall be recorded on the deed of title and/or on the face of a plat or short plat as a condition running in perpetuity with the land, provided, that the Planning Commission may authorize a conveyance that that runs contemporaneous with the authorized land use for any form of public access other than parallel pedestrian access. Said recording with the County Auditor's Office shall occur at the time of permit approval.
 - 400 d. Maintenance of the public access facility shall be the responsibility of the owner unless otherwise accepted by a public or nonprofit agency through a formal agreement approved by the City and recorded with the County Auditor's Office.
 - e. Public access sites shall be made barrier-free for the physically disabled where feasible, and in accordance with the ADA.
 - f. Any trail constructed shall meet the conditions described for shoreline areas in any trail or parks plan officially adopted by the City Council.
9. Views of the shoreline from public properties or substantial numbers of residences shall be protected through adherence to height and setback limits specified in this SMP. Where new development would completely obstruct or significantly reduce the aesthetic quality of views from public properties or substantial numbers of residences, mitigation shall be required as follows:

- 405 a. The City may require administrative modifications to standard setbacks, clustering of
proposed structures, and modifications to landscaping and building massing when the
Planning Commission determines that such modifications are necessary to maintain public
views of the shoreline.
- 410 b. The City shall work with the applicant to minimize the economic impacts of view mitigation.
While upper story setbacks and other changes to building placement and form may be
required to provide view corridors, in no case shall the applicant be required to reduce the
maximum building height for more than 30% of the building's width.
- 415 c. The City may require specific public access improvements (e.g., public viewing decks, etc.) as
mitigation in lieu of more significant modifications to site and building design when the
Planning Commission determines that such modifications would be an unreasonable
financial burden on the applicant.
10. Where there is a conflict between water-dependent shoreline uses or physical public access and
maintenance of views from public properties or substantial numbers of residences that cannot be
resolved using the techniques in Regulation 9 above, the water-dependent uses and physical
public access shall have priority, unless there is a compelling reason to the contrary.
- 420 11. Future actions by the applicant, successors in interest, or other parties shall not diminish the
usefulness or value of the public access provided.

4.7 Water Quality & Non-Point Source Pollution

4.7.1 Applicability

425 This section shall apply to all projects which have the potential to affect the water quality or quantity of
Stevenson shorelines by either changing the flow of surface waters or creating new discharges to
Stevenson's shoreline waterbodies.

4.7.2 Policies

- 430 1. The quality of water in Stevenson's rivers, streams, lakes and their associated wetlands should be
maintained and improved for the beneficial use of the City's citizens and aquatic & terrestrial
wildlife.
2. All shoreline use and development should protect against adverse impacts to public health, to
the land and its vegetation and wildlife, to the waters of the state and their aquatic life, and to
stormwater and water quality.
- 435 3. New developments, expansions, or retrofits of existing developments should be required to
assess the effects of additional stormwater runoff volumes and velocities, and mitigate potential
adverse effects on shorelines through design and implementation of appropriate stormwater
management measures.
- 440 4. Property owners should be encouraged to voluntarily install new, or retrofit existing, stormwater
features per the most current edition of Ecology's *Stormwater Management Manual for Western
Washington*, including using low impact development techniques.

4.7.3 Regulations

1. Design, construction and operation of shoreline uses and developments shall incorporate measures to protect and maintain surface and groundwater quality in accordance with all applicable laws, so that there is no net loss of ecological functions.
- 445 2. Design, construction and operation of shoreline uses and developments shall incorporate measures to protect and maintain surface and groundwater quantity and quality in accordance with all applicable laws, so that significant impacts to aesthetic qualities or recreational opportunities do not occur. A significant impact to aesthetics or recreation would occur if a stormwater facility and appurtenant structures (e.g., fences or other features) have the potential
450 to block or impair a view of shoreline waters from public land or from a substantial number of residences per RCW 90.58.320, or if water quality were visibly degraded so as to discourage normal uses (e.g., swimming, fishing, boating, viewing, etc.).
3. Shoreline development and uses shall adhere to all required setbacks, buffers, and standards for stormwater facilities.
- 455 4. All review activities shall comply with the applicable requirements of all applicable City stormwater, drinking water protection, and public health regulations and the *Stormwater Management Manual for Western Washington*, including using low impact development techniques whenever feasible.
- 460 5. Sewage management. To avoid water quality degradation, sewer service is subject to the requirements outlined below.
 - a. Any existing septic system or other on-site system that fails or malfunctions will be required to connect to the City sewer system if feasible, or make system corrections approved by Skamania County Community Development Department.
 - 465 b. Any new development, business, or multifamily unit shall connect to the City sewer system if feasible, or install an on-site septic system approved by Skamania County Community Development Department.
6. Materials requirements. All materials that may come in contact with water shall be untreated or treated wood, concrete, plastic composites or steel as approved by the USACE or WDFW, that will not adversely affect water quality or aquatic plants or animals.

470 4.8 Shorelines of Statewide Significance

4.8.1 Applicability

This section shall apply to all projects located along the Columbia River, the only shoreline of statewide significance in Stevenson.

4.8.2 Regulations

- 475 1. When determining allowable uses and resolving use conflicts for shorelines of statewide significance, the following preferences and priorities shall apply in the following order of preference and in addition to those listed above:
 - a. Recognize and protect statewide interest over local interest;
 - 480 b. Preserve the natural character of the shoreline;
 - c. Result in long-term over short-term benefit;
 - d. Protect the resources and ecology of the shoreline;

- e. Increase public access to publicly owned areas of the shoreline;
- f. Increase recreational opportunities for the public in the shoreline;
- g. Provide for any other element as defined in RCW 90.58.100 deemed appropriate or necessary.

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Chapter 5 – Shoreline Use Regulations

5.1 Introduction

The provisions in this chapter apply to specific uses and types of development that typically occur in shoreline areas. Provisions in other sections of this SMP may also apply to the uses and types of development identified in this chapter. Shoreline uses are allowed only if permitted by the underlying zoning. A use that occurs on both uplands and in-water/overwater must meet the requirements of both the upland and aquatic environment designations. Refer to specific use policies and regulations below.

5.2 Provisions Applicable to All Uses

1. When determining allowable uses and resolving use conflicts within the City's shoreline jurisdiction, the following preferences and priorities shall apply in the order listed below:
 - a. Reserve appropriate areas for protecting and restoring ecological functions to control pollution and prevent damage to the natural environment and public health.
 - b. Reserve shoreline areas for water-dependent and associated water-related uses.
 - c. Allow mixed uses projects that include or support water-dependent uses.
 - d. Reserve shoreline areas for other water-related and water-enjoyment uses that are compatible with ecological protection and restoration objectives.
 - e. New uses shall be subject to the setback requirements and height limitations contained in Table 5.1 – Shoreline Use & Dimensional Standards.

5.3 Shoreline Use Table

1. Types of Uses: For the purposes of this SMP, there are 3 kinds of use:
 - a. A Permitted (P) use is one that may be permitted through a Shoreline Substantial Development Permit or Statement of Exemption subject to all the applicable provisions of this SMP.
 - b. A Conditional (C) use is a discretionary use reviewed according to the process and criteria in SMP Section 2.7.
 - c. A Prohibited (X) use is one that is not permitted in a Shoreline Environment Designation.
 - d. When a letter or use category is not listed in this section, an interpretation may be initiated under SMP Section 5.4.13.
2. Use Table: A list of permitted, conditional and prohibited uses in each Shoreline Environment Designation (SED) is presented in Table 5.1 – Shoreline Use & Dimensional Standards. The table also lists the minimum shoreline setbacks applicable to the use, activity, or development categories within each SED. This table is intended to work in concert with the specific use policies and regulations that following, however, where there is a discrepancy between this table and the text of the SMP, the text shall take precedence.

TABLE 5.1 – SHORELINE USE & SETBACK STANDARDS										
	Shoreline Environment Designation									
	Most Restrictive					Least Restrictive				
	AQUATIC		NATURAL		SHORELINE RESIDENTIAL		URBAN CONSERVANCY		ACTIVE WATERFRONT	
	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)
P= Permitted, C=Conditional Use, X= Not Permitted, n/a= Not Applicable										
Agriculture & Mining										
Agriculture	X	n/a	X	n/a	X	n/a	X	n/a	X	n/a
Mining	X	n/a	X	n/a	X	n/a	X	n/a	X	n/a
Aquaculture										
Water-Oriented	C	n/a	X	n/a	X	n/a	C	0	C	0
Non-Water Oriented	X	n/a	X	n/a	X	n/a	X	n/a	C	150
Boating Facilities & Overwater Structures										
Non-motorized Boat Launch	See Adjacent Upland Environment		C		P		P		P	
Motorized Boat Launch			X		C		C		P	
Mooring Buoy			C		C		P		P	
Float			X		C		C		P	
Private Leisure Deck			X	n/a	C	n/a	C	n/a	P	n/a
Public Leisure Pier			X		C		P		P	
Single-User Residential Dock			X		C		C		P	
Joint-Use Moorage			X		P		P		P	
Marina			X		X		C		P	
Commercial & Industrial										
Water-Dependent	P				X ¹	0	P	0	P	0
Water-Related, Water Enjoyment	C	n/a	X	n/a	X ¹	75	P	50	P	33
Non-Water-Oriented	X				X	-	C ²	150	C ²	100
Forest Practices										
All	X	n/a	C	50	P	50	P	50	P	25
Institutional										
Water-Dependent	C		C	0	C	0	P	0	P	0
Water-Related	X	n/a	X	n/a	C	100	P	75	P	50
Non-Water-Oriented	X		X	n/a	C	100	C	100	P	100
Cemetery	X		X	n/a	C	50	P	50	C	50
Instream Structures										
All	C	n/a	C	0	C	0	C	0	C	0

TABLE 5.1 – SHORELINE USE & SETBACK STANDARDS, CONT.

	Shoreline Environment Designation									
	Most Restrictive					Least Restrictive				
	AQUATIC		NATURAL		SHORELINE RESIDENTIAL		URBAN CONSERVANCY		ACTIVE WATERFRONT	
	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)
P= Permitted, C=Conditional Use, X= Not Permitted, n/a= Not Applicable										
Land Division										
All	C	n/a	C	n/a	P	n/a	P	n/a	P	n/a
Recreational										
Water-Dependent	P		P	0	P	0	P	0	P	0
Water-Related/Water-Enjoyment	X		C	100	P	50	P	50	P	50
Trail Parallel to the Shoreline, View Platform	C	n/a	P	50	P	50	P	33	P	25
Dirt or Gravel Public Access Trail to the Water	X		P	0	P	0	P	0	P	0
Non-Water-Oriented (golf course, sports field)	X		X	n/a	X	n/a	C	150	C	100
Residential										
Single-Family	X		X		P	50	C	50	X	N/A
Multi-Family	X	n/a	X	n/a	P	50	P	50	P	50
Over-Water Residence	X		X		X	n/a	X	n/a	X	n/a
Transportation & Parking Facilities										
Highway/Arterial Road	C		X	n/a	C	100	P	50	P	50
Access & Collector Road	X		C	100	P	100	P	50	P	50
Private Road	X		C	100	P	50	C	50	C	50
Bridge	C	n/a	C	0	C	0	P	0	P	0
Railroad	C		C	100	C	100	P	50	P	50
Airport	X		X	n/a	X	n/a	C	150	C	150
Primary Parking Facility	X		X	n/a	X	n/a	X	n/a	X	n/a
Accessory Parking (On-Site Parking Serving another Use, Including Recreation/Vista Uses)	X		P	100	P	100	P	50	P	33

TABLE 5.1 – SHORELINE USE & SETBACK STANDARDS, CONT.

	Shoreline Environment Designation									
	Most Restrictive					Least Restrictive				
	AQUATIC		NATURAL		SHORELINE RESIDENTIAL		URBAN CONSERVANCY		ACTIVE WATERFRONT	
	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)	Allowance	Setbacks (ft)
P= Permitted, C=Conditional Use, X= Not Permitted, n/a= Not Applicable										
Utilities										
Water-Oriented	P	n/a	C	0	C	0	P	0	P	0
Non-Water-Oriented (Parallel)	X	n/a	C	100	C	50	P	50	P	33
Non-water-Oriented (Perpendicular)	C	n/a	C	0	C	0	C	0	P	0
1 – All Industrial uses are prohibited, however, a Water-Oriented Commercial use may be allowed as a conditional use in the Shoreline Residential SED. 2 – Conditionally allowed only when a) the project provides a significant public benefit with respect to SMA objectives (e.g., providing public access and ecological restoration) and i) is part of a mixed-use project that includes water-dependent uses or ii) navigability is severely limited or b) the site is physically separated from the shoreline by another property or public right-of-way.										

3. Maximum Building Height: There shall be a 35' maximum height for all structures, except there shall be a 50' maximum height for the following when located in the Active Waterfront SED: Marinas, Water-Oriented Commercial, Industrial, Institutional, and Recreational, and Multi-Family Residential. For a structure to exceed the maximum heights above, the proponent must apply for a Shoreline Variance, and comply with the following criteria in addition to the standard Shoreline Variance Criteria in SMP 2.8:
 - a. Demonstrate that overriding considerations of the public interest will be served, and
 - b. Demonstrate that the proposal will not obstruct the view of a substantial number of residences on areas adjoining such shorelines.

5.4 Specific Shoreline Use Policies & Provisions

5.4.1 Agriculture & Mining

1. Location Description. Agricultural and mining uses are limited and largely inappropriate within Stevenson's shorelines.
2. Applicability.
 - a. In accordance with the provisions of WAC 173-26-241(3)(a)(ii), this SMP applies only to new agricultural activities.
 - b. This SMP applies only to new mining uses.
 - c. Existing agricultural and mining uses, if present, are subject to the nonconforming use provisions of SMP Section 2.9.
3. Policies:
 - a. New agricultural uses should not be permitted on Stevenson's shorelines.

- 60 b. New mining uses are not appropriate within Stevenson should not be permitted on
 Stevenson's shorelines.
- c. Existing agricultural uses should be allowed to continue until the property owner seeks to convert
 the land to some other use.
4. Regulations:
- 65 a. Conversion of agricultural land to non-agricultural uses shall be consistent with the
 applicable Shoreline Environment Designation, the environmental protection and no net loss
 provisions of SMP Section 4.3, and all appropriate regulations for the new use.

5.4.2 Aquaculture

- 70 1. Location Description. Aquacultural uses are limited and largely incompatible with Stevenson's
 vision for its shorelines.
2. Applicability. This SMP applies to all proposed aquaculture uses. Aquaculture is the culture of
 farming of fish, shellfish, or other aquatic plants and animals. Upland finfish rearing facilities as
 defined in this SMP meet the definition of "agricultural activities." Nevertheless, these facilities
 are regulated by the provisions of this section and not SMP Section 5.4.1.
3. Policies:
- 75 a. New aquaculture uses should be discouraged within Stevenson's shoreline jurisdiction.
- b. Because aquaculture is an activity of statewide interest, aquaculture may be considered as a
 Shoreline Conditional Use Permit (SCUP) within appropriate shoreline environment
 designations and when consistent with control of pollution and prevention of damage to the
 environment.
- 80 c. The selection of potential locations for aquaculture facilities should take into account specific
 requirements for water quality, temperature, flows, oxygen content, and adjacent land use
 compatibility, wind protection, and commercial navigation.
4. Regulations:
- 85 a. The development of aquacultural uses shall control pollution and prevent damage to the
 shoreline environment, consistent with the mitigation sequencing policies of SMP Section 4.3
 and other policies of this SMP related to no net loss of shoreline ecological function. In
 particular, aquaculture shall not be permitted if it would spread disease to native aquatic life
 or would establish new non-native species, which cause significant ecological impacts.
- 90 b. New aquaculture uses that use new or experimental technologies may be allowed.
- c. Aquaculture uses shall consider the impacts on adjacent and nearby water-dependent uses, –
 especially recreational uses – and shall not be permitted if, after mitigations are applied, they
 would negatively affect the viability of other water-dependent uses.
- d. Aquaculture facilities shall not significantly conflict with water-based navigation.
- 95 e. The aesthetic impacts of new, expanded, or altered aquaculture facilities shall be addressed
 by using colors and materials that blend with the surrounding environment and locating
 facilities where they are naturally concealed from view.
- 100 f. Non-water-oriented portions of aquaculture facilities (e.g., parking lots, offices, storage,
 dorm or sleeping quarters, etc.) shall be placed upland of water-oriented aquaculture uses.
 Such upland areas must be appropriate for the appurtenant and accessory development,
 including necessary infrastructure.

- g. New finfish rearing facilities required to offset the impacts of hydroelectric facilities under a FERC license shall first obtain a SCUP. Commercial rearing facilities are prohibited.

5.4.3 Boating Facilities & Overwater Structures

- 105 1. Location Description. Boating facilities and overwater structures 1) serve an important role in providing recreational access to the City's shoreline waterbodies, 2) bring tourists to the City, and 3) have the potential to generate economic development in conjunction with port and shipping activity. Boating facilities and overwater structures are limited in Stevenson's shoreline areas. The Columbia River within the current shoreline jurisdiction includes public motorized and
- 110 nonmotorized boating facilities operated by the Port of Skamania County and limited private facilities related to residential uses. Rock Cove and lower Rock Creek are home to informal non-motorized boating facilities on public lands and deteriorating private facilities where some change is expected. In the predesignated area along the Columbia River, there are additional boating facilities and over water structures related to private residential and industrial uses.
- 115 2. Applicability. This section applies to all boating facilities and overwater structures having as their primary purpose launching or mooring vessels, serving some other water- dependent purpose, or providing public access.
3. Policies:
- 120 a. Boating facilities and overwater structures for water-dependent uses or for public access should be allowed, provided they can be located, designed, and constructed in a way that results in no net loss of shoreline ecological functions. In addition to achieving no net loss, boating facilities and overwater structures should locate where they will be compatible with neighboring uses, including navigational and aesthetic considerations and tribal treaty fisheries.
- 125 b. Boating facilities and overwater structures should be restricted to the minimum size necessary to meet the needs of the proposed use. The length, width, and height of overwater structures and other developments regulated by this section should be no greater than that required for safety and practicality for the primary use.
- 130 c. Boating facilities and overwater structures should be constructed of materials that will not adversely affect water quality or aquatic plants and animals in the long term, and have been approved by applicable state agencies.
- 135 d. Boating facilities and overwater structures should be spaced and oriented in a manner that minimizes hazards and obstructions to public navigation rights and corollary rights thereto (e.g., fishing, swimming, pleasure boating, etc.).
- e. To limit the number and extent of overwater structures and minimize potential long-term impacts associated with those structures, mooring buoys should be preferred over docks; boating facilities and overwater structures that serve many (e.g., joint- use moorages, marinas, public leisure piers, etc.) should be preferred over private, single-user facilities and structures.
- 140 f. Piers should be preferred over floating docks where significant river or stream current does not occur.
4. Regulations:

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- a. All boating facilities and overwater structures shall be designed to be consistent with federal and state regulations, including design criteria established by the WDFW, the USACE, and the Washington State Department of Health.
 - b. Boating facilities and overwater structures shall be designed, constructed, and maintained to so as not to interfere with or impair the navigational use shorelines.
 - c. Boating facilities and overwater structures shall only be permitted where it can be demonstrated that:
 - i. The proposed site has the flushing capacity required to maintain water quality;
 - ii. They will not interfere with exercise of tribal treaty fisheries;
 - iii. Adequate facilities for the prevention and control of fuel spillage are incorporated into the proposal;
 - iv. The proposal is engineered or uses proven methods to maximize human safety and minimize potential for flood- or wind-related detachment of the facility from shore;
 - v. There shall be no net loss of ecological functions as a result of the development and associated recreational opportunities;
 - vi. The proposed design will minimize impediments to fish migration; and
 - vii. The proposed design allows light penetration to support aquatic vegetation and prevent the increase of predation on salmonids as a result of overwater structures.
 - d. New boating facilities and overwater structures shall not be located:
 - i. Along braided or meandering river channels where the channel is subject to change in alignment.
 - ii. On point bars or other accretion beaches.
 - iii. In areas with important habitat for aquatic species or where wave action caused by boating use would increase bank erosion rates.
 - iv. Along a shoreline of Rock Cove if the facility is intended for motorized boats
 - e. Facilities and structures for use by motorized boats (including personal watercraft) shall be located far enough from public swimming beaches, fishing and aquaculture harvest areas, and waterways used for commercial navigation to alleviate any adverse impacts, safety concerns, and potential use conflicts.
 - f. Installation of boat waste disposal facilities (e.g., pump-outs, portable dump stations, etc.) shall be required at all marinas and shall be provided at public boat launches to the extent possible. In addition, wash stations to remove noxious weeds shall be provided, where feasible. The locations of such facilities shall be considered on an individual basis in consultation with the state departments of Ecology, Health, Parks, and Washington State Department of Natural Resources (DNR) and WDFW, as necessary.
 - g. Boating facilities and private overwater structures shall be marked with reflectors, or otherwise identified to prevent unnecessarily hazardous conditions for surface-water users during the day or night.
 - h. Floating and other overwater homes, including liveaboard vessels, are prohibited.
 - i. Boating facilities and overwater structures shall be constructed of materials that will not adversely affect water quality or aquatic plants and animals over the long term. Materials used for submerged portions, decking, and other components that may come in contact with water shall be approved by applicable state agencies for use in water to avoid discharge of

- 185 pollutants from wave splash, rain, or runoff. Wood treated with creosote, copper chromium,
arsenic, pentachlorophenol, or other similar toxic materials is prohibited for use in moorage
facilities.
- j. Exterior finish of all boating facilities and overwater structures shall be generally non-
reflective, to reduce glare.
- 190 k. When required under SMP Section 4.6, public access providing overwater viewing
opportunities shall be prioritized for inclusion with boating facilities and overwater
structures.

5.4.4 Commercial & Industrial

- 195 5. Location Description. Commercial and industrial uses within Stevenson shoreline jurisdiction
currently occur on land owned by the Port of Skamania County where future changes and
additions are likely. Addition of new commercial uses are likely on vacant lands adjacent to Rock
Cove and lower Rock Creek. Addition of new industrial uses are likely on vacant lands adjacent to
upper Rock Creek. Redevelopment of the Stevenson Co-Ply mill site and adjacent properties is
likely and could include new commercial and industrial development.
- 200 6. Applicability. This section applies:
- a. During the review of Shoreline Permits (i.e., SSDPs, SCUPs, SVARs) for new, altered, or
expanded commercial and industrial uses.
- b. During the review of Shoreline Statements of Exemption (SoE) for commercial and industrial
uses.
- 205 c. In conjunction with all applicable shoreline use and modification provisions of this SMP (e.g.,
some commercial or industrial developments are often associated with a variety of uses and
modifications, such as parking and dredging that are identified separately in this SMP. Each
shoreline use and every type of shoreline modification should be carefully identified and
reviewed individually for compliance with all applicable sections.).
- 210 7. Policies:
- a. Give first preference to water-dependent commercial and industrial uses over non-water-
dependent commercial and industrial uses; and second, to water-related commercial and
industrial uses over non- water-oriented commercial industrial uses. Existing non-water-
oriented commercial and industrial uses should phase out over time.
- 215 b. Prohibit new non-water-oriented industrial development on shorelines, unless the
circumstances in WAC 173-26-241(3)(f) are found to exist.
- c. Ensure shoreline commercial development provides public access to the shoreline where
opportunities exist, provided that such access would not pose a health or safety hazard.
- d. Encourage industrial development to incorporate public access as mitigation for impacts to
shoreline resources and values unless public access cannot be provided in a manner that
does not result in significant interference with operations or hazards to life or property.
- 220 e. Limit overwater commercial development to that which is water-dependent, or if not water-
dependent, that which is accessory and subordinate as necessary to support a water-
dependent use.
- 225 f. Locate and design industrial development in shoreline areas to avoid significant adverse
impacts to other shoreline uses, resources, and values, including shoreline geomorphic

processes, water quality, fish and wildlife habitat, and the aquatic food web. However, some industrial facilities are intensive and have the potential to negatively impact the shoreline environment. When impacts cannot be avoided, they should be mitigated to assure no net loss of the ecological functions necessary to sustain shoreline resources.

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g. Encourage restoration of impaired shoreline ecological functions and processes as part of new or expanded commercial development, especially for non-water-oriented uses.

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h. Give priority to industrial facilities proposed in areas of the shoreline already characterized by industrial development over such facilities proposed in shoreline areas not currently developed for industrial or port uses.

i. Locate industrial development where restoration of impaired shoreline ecological functions and processes and environmental cleanup can be included in the design of the project.

8. Regulations:

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a. Water-dependent commercial and industrial uses shall be given preference over water-related and water-enjoyment commercial and industrial uses. Second preference shall be given to water-related and water-enjoyment commercial and industrial uses over non-water-oriented commercial and industrial uses.

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b. Prior to approval of water-dependent uses, the Administrator shall review a proposal for design, layout and operation of the use and shall make specific findings that the use qualifies as a water-dependent use.

c. When allowed, industrial development shall be located, designed and constructed in a manner that assures no net loss of shoreline ecological functions.

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d. Commercial development that is not water-dependent shall not be allowed over water except where it is located within the same existing building and is necessary to support a water-dependent use.

e. Overwater and in-water construction of non-water-oriented industrial uses is prohibited. This provision is not intended to preclude the development of docks, piers, or boating facilities, or water-related uses that must be located in or over water (e.g., security worker booths, etc. that are necessary for the operation of the water-dependent or water-related use).

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f. Only those portions of water-oriented industrial uses that require over or in-water facilities shall be permitted to locate waterward of the OHWM, provided they are located on piling or other open-work structures, and they are limited to the minimum size necessary to support the structure's intended use.

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g. Water-related and water-enjoyment uses shall avoid impacts to existing navigation, recreation, and public access.

h. Non-water-oriented commercial development shall not be allowed unless:

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i. The use is part of a mixed-use project that includes water-dependent uses, and provides a significant public benefit with respect to provisions of public access or ecological restoration; or

ii. Navigability is severely limited at the proposed site, and the commercial use provides a significant public benefit with respect to provision of public access or ecological restoration; or

iii. The site is designated for commercial use and is physically separated from the shoreline by another property or a public right-of-way.

- 270 i. New commercial and industrial developments shall provide public access to the shorelines,
subject to SMP Section 4.6.
- j. Public access and ecological restoration shall be considered as potential mitigation of
impacts to shoreline resources and values for all water-related or water dependent
development unless such improvements are demonstrated to be infeasible or inappropriate.
- 275 k. New industrial developments shall mitigate for the impacts of the use's intensity by
providing shoreline restoration consistent with the shoreline restoration plan adopted by the
City.

5.4.5 Forest Practices

- 280 1. Location Description. Forested lands currently exist along Rock Creek and forest practices are
expected in that and other areas within Stevenson's shoreline jurisdiction.
2. Applicability.
- a. This section applies to any forest practice that includes activities other than timber cutting
permitted under the Forest Practices Act.
- b. This section applies to forest practice conversions and other Class IV-General forest practices
285 where there is a likelihood, in the opinion of the Administrator, of conversion to nonforest
uses.
- c. This section does not apply to any other permitted forest practices for which the City relies
on the Forest Practices Act, rules implementing that act, and the *Forest and Fish Report* to
provide adequate management of commercial forest uses within Stevenson's shoreline
290 jurisdiction.
3. Policies:
- a. Given the importance of the forest industry to Skamania County's economy, the viability of
this industry should be protected while also protecting the City's shorelines from
incompatible forest practices that would harm shoreline ecology or negatively impact other
295 uses especially recreation and public access.
- b. Proposed forest practices regulated by this SMP should result in no net loss of shoreline
ecological functions.
- c. Non-harvest forest practices (e.g., creation of roads, stream crossings, forestry structures and
buildings, log storage, etc.) should comply with the regulations of this section and result in
300 no net loss.
- d. Forest practices should comply with regulations established by the Washington State Forest
Practices Act, including coordination with the DNR for Class IV forest practices conversions to
non-forest uses and should also comply with selective timber harvesting requirements on
shorelines of statewide significance contained in RCW 90.58.150.
- 305 4. Regulations:
- a. Commercial harvest of timber undertaken on shorelines shall comply with the applicable
policies and provisions of the *Forests and Fish Report* (U.S. Fish and Wildlife Service, et al.,
1999) and the Forest Practices Act, RCW 76.09 as amended, and any regulations adopted
pursuant thereto (WAC 222), as administered by DNR, but is not subject to this SMP
- 310 b. Along the Columbia River, a shoreline of statewide significance, no more than 30% of the
merchantable trees located within 200 feet of the OHWM may be harvested within any 10-

year period unless approved through a shoreline conditional use permit. Other timber harvesting methods may be permitted in those limited instances where the topography, soil conditions, or silviculture practices necessary for regeneration render selective logging ecologically detrimental.

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c. For the purposes of this SMP, preparatory work (e.g., grading, installation of utilities, vegetation removal, clear cutting, etc.) associated with the conversion of land to non-forestry uses and/or developments including conversion timber harvests shall not be considered a forest practice regulated by this SMP and shall be reviewed in accordance with the provisions for the proposed non-forestry use, modification provisions, and the general provisions of this SMP, including vegetation conservation. At a minimum, the conversion of forest land to non-forestry uses and/or developments shall not have a significant adverse impact to other shoreline resources, values, or other shoreline uses such as navigation, recreation, and public access.

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d. Non-harvest forest practices (e.g., construction of roads, stream crossings, log storage, buildings to assist with forest practices activities regulated by RCW 76.09) are considered development under this SMP and shall adhere to the requirements of this section including demonstrating no net loss of shoreline ecological function and the applicable requirements below:

330

i. All forest practices subject to this SMP shall meet the setbacks in SMP Table 5-1.

ii. Roads. Roads shall be constructed outside of shoreline jurisdiction unless demonstrated not to be feasible.

iii. Roads. If constructed within shoreline jurisdiction, roads shall be the minimum width necessary to for the forest practice activity and shall be maintained (e.g., regular placement of gravel) to prevent erosion to nearby streams.

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iv. Roads. Roads shall follow the contour of the land to avoid the necessity for deep cuts or placement fill to stabilize roads.

v. Stream Crossings. Bridges are preferred over culverts in streams to prevent impacts to aquatic life and habitats.

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vi. Stream Crossings. If culverts are proposed, they shall be designed to minimize impacts to aquatic life (e.g., allowing for passage of fish in streams).

vii. Log Storage. Log storage shall occur outside of shoreline jurisdiction whenever other areas are demonstrated to be feasible. Log storage may occur at industrial sawmill operations at previously cleared and improved industrial sites for the purposes of shipment and storage for milling, provided that erosion and sediment control BMPs in compliance with the *Stormwater Management Manual for Western Washington* (2014 or as amended).

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viii. Temporary Structures. Temporary structures associated with forestry uses are non-harvest forest practices, which are regulated by this SMP. These structures, at a minimum, are subject to the general provisions of this SMP.

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5.4.6 Institutional

1. Location Description. Institutional uses include land uses and/or related structures for the provision of educational, medical, cultural, public safety, social and/or governmental services to

the community. Cemeteries are located within the shoreline jurisdiction for Rock Creek and the pre-designated shoreline area along the Columbia River. The Columbia River, Rock Cove, and lower Rock Creek contain institutional uses for the Skamania County, the Port of Skamania County, and non-profit service providers. These uses are subject to change overtime.

2. Applicability.

- a. This section applies to all new, expanded, or altered institutional uses within Stevenson's shoreline jurisdiction.
- b. This section does not apply to existing cemeteries which are not expanded or altered, however, existing cemeteries are not exempt from the general provisions, the bulk and dimensional standards of SMP Table 5.1 and shoreline modification provisions of this SMP, as applicable.

3. Policies:

- a. Preference should be given to institutional developments which include water-dependent and water-related uses and activities as primary uses within shoreline areas.
- b. New institutional development along shorelines should use innovative designs, including low impact development approaches, Leadership in Energy and Environmental Design or other sustainable development measures to serve as an example of optimal shoreline development.
- c. Institutional development should be designed and located so as to avoid or minimize impacts to shoreline ecological functions and achieve no net loss in compliance with SMP Section 4.3.
- d. Institutional developments that abut the water's edge should provide physical and/or visual public access to the shoreline consistent with SMP Section 4.6.

4. Regulations

- a. Institutional uses shall be designed to prioritize uses such that water-dependent uses have preferred shoreline location, followed by water-enjoyment and water enjoyment uses, with non-water-oriented uses having least priority. This includes, where feasible locating water-related uses landward of water-dependent and water enjoyment uses, and non-water-oriented uses landward of all water-oriented uses.
- b. Where institutional uses are allowed as a conditional use, the following must be demonstrated:
 - i. A water dependent use is not reasonably expected to locate on the proposed site due to topography, surrounding land uses, physical features of the site, or the site's separation from the water;
 - ii. The proposed use does not displace a current water-oriented use and will not interfere with adjacent water-oriented uses; and
 - iii. The proposed use will be of substantial public benefit by increasing the public use, enjoyment, and/or access to the shoreline consistent with protection of shoreline ecological functions.
- c. Where allowed, non-water-oriented institutional uses may be permitted as part of a mixed use development provided that a significant public benefit such as public access and/or ecological restoration are provided.

- d. In no case shall loading, service areas, and other accessory uses be located waterward of the structure. Loading and service areas shall be screened from view with native plants.

5.4.7 Instream Structures

- 400 1. Location Description. Stevenson's shorelines include a variety of instream structures including dams, irrigation facilities, hydroelectric facilities, utilities, and flood control facilities. Instream structures are important because they provide specific benefits to humans, but also can impact the environment by impeding fish migrations, disrupting waterbody substrate, and changing the flow of waters.
- 405 2. Applicability. This section applies to all instream structures placed by humans within a stream or river waterward of the OHWM that causes or has the potential to cause water impoundment or diversion, obstruction, or modification of water flow. Docks, marinas, piers, shoreline stabilization, and boating facilities, although located instream, are not regulated by this section and are not instream structures for the purposes of this section.
- 410 3. Policies:
 - a. The location, design, construction and maintenance of instream structures should give due consideration to the full range of public interests, watershed functions and processes, and environmental concerns, with special emphasis on protecting and restoring priority habitats and species.
 - 415 b. Non-structural and non-regulatory approaches should be encouraged as an alternative to instream structures. Non-regulatory and nonstructural approaches may include public facility and resource planning, land or easement acquisition, education, voluntary protection and enhancement projects, or incentive programs.
- 420 4. Regulations
 - a. New instream structures shall obtain approvals through other agencies (e.g., USACE, Ecology, WDFW, DNR, etc.) where applicable.
 - b. New instream structures shall not interfere with existing water-dependent uses, including recreation.
 - c. Instream structures shall allow for natural surface water movement and surface water runoff.
 - 425 d. Instream structures shall not be a safety hazard or obstruct water navigation.
 - e. Instream structures shall be designed by a qualified professional.
 - f. Instream structures shall provide for the protection, preservation, and restoration of ecosystem- wide processes, ecological functions, and cultural resources (e.g., fish and fish passage, wildlife and water resources, hydrogeological processes, natural scenic vistas, etc.).

5.4.8 Land Division

- 430 1. Location Description. Land division is an accepted outcome of urban development and occurs in all areas of Stevenson's shoreline jurisdiction.
2. Applicability. This section applies to all proposed land division within shoreline jurisdiction.
3. Policies
 - a. Land division should not result in a net loss of ecological functions.
 - 435 b. Land division should not complicate efforts to maintain or restore shoreline ecological functions.

- c. Land division involving the subdivision of land into more than 4 parcels should provide community and/or public access in conformance with SMP Section 4.6
- 4. Regulations:
 - 440 a. Plats and subdivisions shall be designed, configured and developed in a manner that assures no net loss of ecological functions results from the plat or subdivision at full build-out of all lots.
 - b. The layout of lots within 1) new plats and subdivisions, 2) plat amendments, or 3) boundary line adjustments shall:
 - 445 i. Prevent the need for new shoreline stabilization or flood hazard reduction measures that would cause significant impacts to other properties or public improvements or a net loss of shoreline ecological functions.
 - ii. Not result in lots containing inadequate buildable space due to critical areas and/or their buffers.
 - 450 c. To ensure the success of restoration and long-term maintenance, the City may require that critical areas and/or aquatic lands be placed in a separate tract which may be held by an appropriate natural land resource manager (e.g., homeowner's association, land trust, natural resource agency, etc.).

5.4.9 Recreational

- 455 1. Location Description. Recreational uses are an important part of Skamania County's economy, and the increase in recreational opportunities was a key goal of City leaders during the economic decline of the forestry and milling industries. According to information from the Washington State Employment Security Department, the "Leisure and Hospitality Category" makes up approximately one quarter of Skamania County's economy which is a reflection of the
460 importance of tourism in the County and the success of the City in making recreation part of its foundation. Currently the Columbia River, Rock Cove, and lower Rock Creek shorelines are developed with recreational amenities, and all shorelines have the potential for additional recreation.
- 465 2. Applicability. This section applies to all new, expanded, or altered recreational uses and facilities which include public and private (commercial) facilities for recreational activities (e.g., camping, hiking, fishing, photography, viewing, birdwatching, concession stands) and more intensive uses (e.g., parks with sports facilities, other outdoor recreation areas).
- 3. Policies:
 - 470 a. The City should develop a parks and recreation master plan that is mutually consistent with this SMP and consistent with the public access planning guidelines of WAC 173-26-221(4)(c).
 - b. Water-oriented recreational uses are a priority use category under the SMA and for development of the City's shorelines and economy and should be promoted. Non-water-oriented uses are not preferred and should be allowed only if it can be demonstrated that they do not displace water-oriented recreational opportunities.
 - 475 c. Public access should be incorporated into all recreational projects consistent with SMP Section 4.6 and consistent with constitutional, safety, and environment provisions of that section.

- 480
- d. The City should work with BNSF Railway and WSDOT to expand recreational access to the Columbia River and connections between the Columbia River and lower Rock Creek.
- e. The City should work with private property owners and developers adjacent to recreational uses to help fund improvements which will draw people to shorelines and benefit adjacent businesses.
- 485
4. Regulations:
- a. Water-oriented recreational development shall be given priority and shall be primarily related to access, enjoyment, and use of the water and shorelines.
- b. Non-water-oriented recreational developments may be permitted only where it can be demonstrated that:
- 490
- i. A water-oriented use cannot feasibly locate on the proposed site due to topography and/or other physical features, surrounding land uses, or the site's separation from the water;
- ii. The proposed use does not usurp or displace land currently occupied by a water-oriented use and will not interfere with adjacent water-oriented uses;
- iii. The proposed use will be of appreciable public benefit by increasing ecological functions together with public use, enjoyment, or access to the shoreline.
- 495
- c. Non-water-oriented accessory uses (e.g., offices and parking areas that are part of recreational facilities) should be located landward of water-oriented facilities.
- d. Recreational facilities shall include features such as buffer strips, screening, fences, and signs, if needed to protect the value and enjoyment of adjacent or nearby private properties and natural areas from trespass, overflow and other possible adverse impacts.
- 500
- e. Recreation facilities shall demonstrate that they are located, designed, and operated in a manner consistent with the purpose of the shoreline environment designation in which they are located and will result in no net loss of shoreline ecological functions.
- f. Where fertilizers and pesticides are used in recreational developments, waters in and adjacent to such developments shall be protected from drainage and surface runoff.

505 **5.4.10 Residential Development**

1. Location Description. Single-Family and Multi-Family residential development exists and is planned for several areas of Stevenson's shoreline jurisdiction. The SMA considers single-family residences and their appurtenant structures to be preferred uses similar to water-dependent uses (e.g., ports, recreational uses, public access, commercial and industrial developments). Single-Family uses are mainly considered for areas of upper Rock Creek, along certain areas of the Columbia River and in areas that are separated from the OHWM by road or rail. Multi-Family development is considered along parts of Rock Cove, lower Rock Creek, and the Columbia River, and as part of mixed use projects.
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2. Applicability. This section applies:
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- a. During the review of Shoreline Permits (i.e., SSDPs, SCUPs, SVARs) for new, altered, or expanded residential uses including new subdivisions and multifamily developments.
- b. During the review of Shoreline Statements of Exemption (SoE) for development of one single-family dwelling.
3. Policies:

- 520 a. Development of single-family residential homes and appurtenant structures are preferred
uses under the SMA only when consistent with the control of pollution and prevention of
damage to natural resources, and should be encouraged in appropriate Shoreline
Environment Designations provided they meet the standards of this program to achieve no
net loss.
- 525 b. New single-family residential uses should limit shoreline environmental impacts through
implementation of the setback and shoreline modification standards of this SMP, as well as
provision of stormwater control and adherence to City building, public works, and zoning
standards.
- 530 c. New residential development of more than 4 units should provide public access consistent
with SMP Section 4.6.
- d. New floating homes should be prohibited due to their resulting increases in overwater
coverage which can increase juvenile salmon predation and associated pollution from
uncontrolled stormwater runoff, sewage and graywater releases.
- 535 e. New residential development should be subject to the general provisions and environment
designation provisions of SMP Chapters 3 and 4 and specific use regulations below.
- f. Existing residential structures and their appurtenant structures that were legally established,
but which do not meet setback or height requirements in this SMP should be considered
conforming under this SMP. Redevelopment, expansion, change of the class of occupancy, or
replacement of the residential structure may be allowed as consistent with applicable
provisions of this SMP, including requirements for no net loss of shoreline ecological
functions.
- 540
4. Regulations:
- a. New single-family homes are prohibited within the Active Waterfront SED.
- 545 b. New over-water residences, floating homes, and liveaboard vessels are prohibited.
- c. Home occupation businesses, as described in SMC Table 17.13.020-1, which are accessory to
residential uses are permitted provided all other provisions of this SMP are met.
- d. Setbacks: New, expanded, or altered residential uses and development and appurtenant and
accessory uses shall adhere to the setback standards in SMP Table 5-1.
- 550 i. Minor Setback Adjustments, Setback Consistency. The Shoreline Administrator may
approve a minor adjustment in setback standards for single-family residential uses,
up to a maximum of 10% provided that:
1. A single family dwelling exists on an adjacent property, and has a setback
measurement that is closer than current requirements;
 2. The adjustment area does not contain native vegetation;
 - 555 3. Critical areas or buffers are not present, would not be impacted, or will be
mitigated on site to achieve no net loss; and
 4. The applicant demonstrates that reducing the setback using this approach
would improve views from the proposed single-family residence.
- ii. Minor Setback Adjustments, Buildable Lots of Record. Adjustments available under
SMC 18.13.025(C)(2) shall be available for residential setbacks identified in SMP
Table 5.1.
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- iii. Setback Variances. Variances to setback standards that do not qualify for the minor adjustments above may be approved as consistent with the provisions of SMP Chapter 2.
 - iv. Water-oriented residential uses (e.g., stairs, walkways, unimproved/natural shoreline access trails, piers, docks, bridges, stabilization, and shoreline ecological restoration projects) may be allowed within the setback provided that:
 - 1. The total impervious surface coverage by all uses within the setback does not exceed 2,000 square feet or 10% of the area within shoreline setbacks of the subject property, whichever is less;
 - 2. When the impact on shoreline vegetation can be mitigated according to SMP 6.4.1; and
 - 3. When no net loss of shoreline ecological functions can be demonstrated.
 - e. Impervious Surface Coverage. Within the Shoreline Residential designation, impervious surface coverage shall be limited to 50% of the lot or parcel area within shoreline jurisdiction.
 - f. Vegetation conservation and shoreline stabilization. New, expanded, or altered residential uses shall adhere to the vegetation conservation requirements of SMP Section 6.4.1 and the shoreline stabilization requirements of SMP Section 6.4.3.

5.4.11 *Transportation & Parking Facilities*

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- 1. Location Description. Transportation and parking facilities are necessarily associated with many shoreline uses, and the location of these facilities currently occurs in many areas of Stevenson shoreline jurisdiction regardless of the shoreline environment designation.
 - 2. Applicability. This section applies to all new and redeveloped transportation and parking facilities.
 - 3. Policies.
 - a. New non-water-oriented transportation facilities should be located outside shoreline jurisdiction unless there is no reasonably feasible alternative alignment or location as determined by an alternatives analysis.
 - b. When it is necessary to locate transportation facilities in shoreline areas, they should be located where routes will have the least impact to shoreline ecological functions, will not result in a net loss of shoreline ecological functions, and will not impact existing or planned water-dependent uses adversely. Where feasible, a perpendicular alignment to shoreline should be preferred for transportation facilities over a parallel alignment which uses more shoreline area.
 - c. Given that the City's Columbia River Shoreline is bisected by the BNSF railroad and the SR 14, the City should explore opportunities for pedestrian over- and underpasses linking upland areas with the waterfront.
 - d. Public visual and physical access areas should be encouraged as part of new transportation facilities (e.g., viewpoints, rest areas, picnic facilities, trail/bike systems adjacent to roads or railroads, etc.) where feasible and safe to do so. For bridges, public pedestrian access should be considered 1) on the bridge over the waterbody and 2) under or over the bridge parallel to the waterbody.

- 605 e. The City should consider adopting special standards for to unsure public and private roads within shoreline jurisdiction do not result in net loss of shoreline ecological functions.
- 610 f. Parking is not a preferred shoreline use and should be allowed only to support a use authorized under the SMP.
- 615 g. Parking facilities should be located outside of shoreline jurisdiction or as far landward from the OHWM as feasible. Parking facilities serving individual buildings on the shoreline should be located landward, adjacent, beneath, or within the principal building being served. When located within shoreline jurisdiction, the location and design of parking facilities should:
- 620 i. Minimize visual and environmental impacts to adjacent shoreline and critical areas including provision of adequate stormwater runoff and treatment facilities. Parking areas should be adequately fenced and/or screened along the waterward edges of parking facilities and along the sides of such facilities when they abut differing land uses; and
 - 625 ii. Provide for pedestrian access through the facility to the shoreline.
4. Regulations.
- 630 a. Applications for redevelopment of transportation facilities in shoreline jurisdiction shall include:
 - 635 i. Analysis of alternative alignments or routes, including, where feasible, alignments or routes outside of shoreline jurisdiction;
 - 640 ii. Description of construction, including location, construction type, and materials; and, if needed,
 - 645 iii. Description of mitigation and restoration measures.
 - 650 b. Proposed transportation projects shall plan, design, and locate where routes will have the least possible adverse effect on unique or fragile shoreline features, and will not result in a net loss of shoreline ecological functions or adversely impact existing or planned water-dependent uses. Alternative designs for transportation facilities that have less impact on shoreline resources (i.e., narrower rights-of-way, realignment) shall be considered in compliance with the SMC.
 - 655 c. Roads and railroads of all types shall cross shoreline jurisdiction by the most direct route feasible, unless such a route would result in greater impacts on wetlands and fish and wildlife habitat conservation areas, or channel migration than a less direct route.
 - 660 d. Wherever feasible and in compliance with the SMC, transportation facilities, including local access roads and surface parking facilities, shall be shared across shoreline uses to reduce the need for redundant facilities.
 - 665 e. New, replacement and enlarged transportation facilities shall provide public access pursuant to SMP Section 4.6.
 - 670 f. The City shall seek opportunities to obtain public easements and construct pedestrian connections over or under the railroad and state highway. The City shall place the pedestrian connection in its capital improvement plan and may require it as a condition of approval for Shoreline Permits, including permits involving new or replacement bridges and other transportation facilities.

- 645 g. Primary parking facilities (pay parking lots, park-and-rides) are not allowed within shoreline jurisdiction. Accessory parking (including parking for vista purposes) and loading facilities necessary to support an authorized shoreline use are permitted.
- 650 h. All of the following conditions shall be met when an accessory parking facility is proposed in the shoreline jurisdiction:
- 655 i. The facilities serving water-dependent and non-water oriented uses shall be located landward, adjacent to, beneath or within the building being served. The facilities serving water-related and water-enjoyment uses shall give first preference for location landward, adjacent to, beneath, or within the building being served.
 - 660 ii. Upland parking facilities shall provide safe and convenient pedestrian circulation from the parking area to the shoreline.
 - 665 iii. Loading spaces for development in the shoreline jurisdiction shall be located on the landward or side wall of non-water-dependent uses or activities.
 - 660 iv. All facilities shall provide parking suitable to the expected usage of the facility, with preference given to pavement or other dust-free all-weather surfaces.
 - 660 v. All facilities shall be screened from adjacent, dissimilar uses through the use of perimeter landscaping, fencing, or some other approved material.

5.4.12 Utilities

- 665 1. Location Description. Like transportation and parking facilities, utilities are necessarily associated with many shoreline uses, and the location of these facilities currently occurs in many areas of Stevenson shoreline jurisdiction regardless of the shoreline environment designation.
- 670 2. Applicability.
 - 675 a. This section applies to primary uses and activities (e.g., such as solid waste handling and disposal, sewage treatment plants and outfalls, public high-tension utility lines on public property or easements, power generating or transfer facilities, gas distribution lines and storage facilities, wireless telecommunications, etc.).
 - 680 b. This section does not apply to on-site utility features serving a primary use (e.g., a water, sewer or gas line to a residence or other approved use) which are considered "accessory utilities" and part of the primary use.
 - 685 c. This section applies to actions related to utility facilities which do not qualify for a normal repair and maintenance exemption under SMP Section 2.5.
- 685 3. Policies.
 - 685 a. Non-water-oriented utility facilities should be located outside shoreline jurisdiction to the maximum extent feasible.
 - 685 b. Utility facilities should existing transportation and utility rights-of-way, easements, or existing cleared areas to the greatest extent feasible.
 - 685 c. Utility facilities should be designed, located and maintained to achieve no net loss of shoreline ecological functions.
 - 685 d. Existing and new overhead utilities along the Columbia River shoreline should be brought underground whenever feasible.
 - 685 e. The City should incorporate existing major transmission line rights-of-way on shorelines into its program for public access to and along water bodies.

4. Regulations.
- a. All utility facilities shall be designed and located to minimize harm to shoreline ecological functions, preserve the natural landscape, and minimize conflicts with present and planned land and shoreline uses while meeting the needs of future populations in areas planned to accommodate growth.
 - b. Infrastructure plans shall be reviewed for compatibility with this SMP, and utility service availability in shoreline jurisdiction shall not be the sole cause justifying more intense development.
 - c. Primary utility production and processing facilities that are non-water-oriented shall not be allowed in shoreline areas unless it can be demonstrated that no other feasible option is available.
 - d. Transmission facilities shall be located to cause minimal harm to the shoreline and shall be located outside of shoreline jurisdiction whenever feasible. When located within the Columbia River shoreline, utility facilities shall be brought underground.
 - e. Transmission facilities shall be located in existing rights-of-way whenever possible, cross shoreline jurisdiction by the most direct route feasible, and generally be located perpendicular to the shoreline, unless an alternative route would result in less impact on shoreline ecological functions;
 - f. Where environmental impacts are less significant, utility transmission lines, pipes, and wires shall be bored under a river, stream, or CMZ, or permanently affixed to a bridge or other existing above-ground structure, where feasible;
 - g. Restoration of ecological functions shall be a condition of new and expanded non-water-dependent utility facilities.

5.4.13 Unlisted Uses

- 1. Purpose. It is not possible to contemplate all of the various uses that will be compatible within a shoreline environment designation. Therefore, unintentional omissions occur. The purpose of these provisions is to establish a procedure for determining whether certain specific uses would have been permitted in a shoreline environment designation had they been contemplated and whether such unlisted uses are compatible with the listed uses.
- 2. Process. To the extent practicable, the interpretation of uses under this SMP shall be guided by the Zoning Code's provisions related to interpretation of uses at SMC 17.12.020, provided that prior to establishing any unlisted use within shoreline jurisdiction, the applicant shall first obtain a Shoreline Conditional Use Permit under SMP Section 2.7 and WAC 173-27-160.

Chapter 6 – Shoreline Modification Provisions

6.1 Introduction

The policies and provisions in this chapter apply to all new, altered, or expanded shoreline modifications. While shoreline uses typically occur on a permanent or ongoing basis, shoreline modifications are typically temporary or one-time activities undertaken in support of or in preparation for a shoreline use. Shoreline modifications include construction-related activities such as a dike, breakwater or shoreline stabilization, but also include activities such as dredging, filling, clearing, grading, and vegetation removal. For example: vegetation removal and grading (shoreline modifications) may be necessary to prepare for a boat launch (shoreline use).

6.2 General Provisions for All Shoreline Modifications

Shoreline modifications are expected to implement the following principles:

1. Policies: The environmental impacts of new shoreline modifications should be consistent with the following:
 - a. Limit the number and physical extent of shoreline modifications,
 - b. Consider the site-specific conditions which inform the need for and type of modification which is appropriate, with a preference for lesser ecological impacts, and non-structural modifications over structural,
 - c. Allow structural shoreline modifications only where they i) are demonstrated to be necessary to support or protect an allowed primary structure or a legally existing shoreline use that is in danger of loss or substantial damage or ii) are necessary for reconfiguration of the shoreline for mitigation or enhancement purposes,
 - d. Incorporate all feasible measures to protect, restore, and enhance ecological functions and ecosystem-wide processes as modifications occur.
2. Regulations: All proposed shoreline modifications shall:
 - a. Meet the mitigation sequencing requirements in SMP Section 4.3.
 - b. Satisfy all specific shoreline modification provisions of this chapter.

6.3 Shoreline Modifications Table

The shoreline modification table below determines whether a specific shoreline modification is allowed within each of the shoreline environments. This table is intended to work in concert with the specific modification policies and regulations that follow, however, where there is a discrepancy between this table and the text of the SMP, the text shall take precedence.

TABLE 6.1 – ALLOWED SHORELINE MODIFICATIONS						
	Most Restrictive to Least Restrictive					
	AQUATIC	NATURAL	SHORELINE RESIDENTIAL	URBAN CONSERVANCY	ACTIVE WATERFRONT	
P= Permitted, C=Conditional Use, X= Not Permitted, N/A= Not Applicable						
Vegetation Removal	See Adjacent Upland Environment					
All		P	P	P	P	
Fill						
Fill Upland of OHWM		C	P	P	P	
Fill Waterward of OHWM		C	C	C	C	
Shoreline Stabilization						
Soft Stabilization		P	P	P	P	
Hard Stabilization		X	C	C	C	
Shoreline Restoration						
All		P	P	P	C	
Dredging ¹						
New Channel or Basin		X	C	P	P	
Maintenance Dredging		P	P	P	P	
Dredge Disposal w/i a Channel Migration Zone		X	C	C	C	
Dredge Disposal for Ecological Restoration/Enhancement		X	C	C	C	
Breakwaters, Jetties, Groins & Weirs						
All		C ²	C ²	C ²	C ²	
1 – Dredging for fill is generally prohibited except for a Model Toxics Control Act (MTCA), Comprehensive Environmental Response Compensation and Liability (CERCLA), or habitat restoration project approved by a shoreline conditional use permit (SCUP). 2 – A SCUP is not required when those structures are installed to protect or restore ecological functions (e.g., large woody material installed in streams, etc.).						

35 **6.4 Specific Shoreline Modification Provisions**

6.4.1 Vegetation Removal

1. Applicability:
 - a. This section applies to any removal of or impact to shoreline vegetation, whether or not that activity requires a Shoreline Permit. Such activities include clearing, grading, grubbing, and trimming of vegetation.
 - b. This section does not apply retroactively to existing legally established uses and developments and the ongoing maintenance of lawns, gardens, or landscaping. This section

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does not apply to activities associated with a Forest Practices Permit, unless the permit involves conversion to non-forestry uses.

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- c. The provisions of SMC 18.13.025(D)(1) apply to vegetation removal within shoreline jurisdiction.
 - d. The provisions of and SMC 18.13.095 apply to all vegetation removal within 150 ft of the OHWM or such other buffer as established in SMP Section 4.4.
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2. Policies:
- a. Native shoreline vegetation should be conserved where new developments, uses, or shoreline modifications are proposed.
 - b. Vegetation removal and conservation should not prevent shoreline uses but should provide for management in a manner that assures no net loss of shoreline ecological functions.
 - c. Shade-providing vegetation, especially on the south and west banks of waterbodies, should be prioritized.
 - d. Management and control of noxious and invasive weeds should be achieved in a manner that retains onsite native vegetation, provides for erosion control, and protects water quality.
 - e. Voluntary enhancement of native shoreline vegetation should be encouraged.
 - f. Public education on the benefits of native vegetation, the adverse impacts of lawn chemicals and fertilizers, and participation in the Skamania County Master Gardeners training should be encouraged.
 - g. Vegetation conservation should not apply retroactively to existing legally established uses and developments where the removal of vegetation is consistent with a previously-approved landscaping, mitigation, and/or restoration plan.
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3. Regulations:
- General**
- a. Vegetation removal shall be limited to the minimum necessary to accommodate approved shoreline development that is consistent with all other provisions of this SMP. This includes the design, location, and operation of the structure or development, including septic drain fields, which shall minimize vegetation removal and meet all applicable requirements.
 - b. If removal of shoreline vegetation is unavoidable, vegetation removal shall be mitigated in accordance with the requirements in SMP Table 6.2 – Mitigation for Vegetation Removal within Shoreline Jurisdiction. Exceptions:
 - i. The removal of native vegetation within established gardens, landscaping that serve a horticultural purpose shall not require mitigation under SMP Table 6.2.
 - ii. Mitigation plans prepared by a qualified professional may establish mitigation rations that deviate from SMP Table 6.2.
 - c. No tree containing an active nest of an eagle, osprey, or other protected bird (as defined by WDFW or the Bald and Golden Eagle Protection Act) shall be removed and the nest shall not be disturbed unless the applicant obtains approval from WDFW.
 - d. Vegetation removal conducted for the purposes outlined in SMC 18.13.025(D)(1)(a through d) shall comply with the regulations therein.
 - e. Aquatic weed control shall be allowed only where the presence of aquatic weeds will affect native plant communities, fish and wildlife habitats, or an existing water dependent use adversely. Aquatic weed control efforts shall comply with all applicable laws and standards.
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TABLE 6.2 – MITIGATION FOR VEGETATION REMOVAL WITHIN SHORELINE JURISDICTION		
Location of Vegetation Removal	Type of Vegetation Removal	Mitigation Action Required^{1,2,3,4}
Anywhere	Invasive or noxious vegetation	Native or non-native vegetation planting at 1:1 area ratio
	Hazard Tree	Native or non-native replacement planting at 2:1 replacement ratio
50 Feet or Less from OHWM	Grass, pasture, non-woody, or non-native vegetation (excluding invasive or noxious vegetation)	Native or non-native vegetation planting at 1:1 mitigation ratio
	Native groundcover and understory	Native replacement planting at 2:1 mitigation ratio
	Native tree <12 inches DBH	Native, woody vegetation replacement planting at 2:1 mitigation ratio
	Significant tree >12 inches DBH	Native treereplacement planting at 3:1 mitigation ratio
More than 50 Feet from OHWM	Any non-native vegetation	Native or non-native replacement planting at 1:1 mitigation ratio
	Native groundcover or understory	Native replacement planting at a 1:1 mitigation ratio
	Any native tree	Native tree replacement planting at 2:1 mitigation ratio
Outside Oregon White Oak Woodland Dripline	Any removal of native or non-native vegetation within shoreline jurisdiction	Temporary tree protection fencing required prior to ground disturbance. No clearing, grading, trenching staging, boring, or any other activity is allowed within the dripline of the oak woodlands. Conservation covenant or other mechanism may be required if future development is likely to impact mitigation area.
Inside, Entirely or Partially, Oregon White Oak Woodland Dripline	No oak removal and no significant damage to health of the oak trees as demonstrated by arborist's report.	Install temporary tree protection fencing required prior to ground disturbance at the extent of proposed activity to ensure that no clearing, grading, trenching, staging, boring or any other activity will occur within the dripline of oak woodlands beyond what has been recommended by an arborist. Require mitigation for lost scrub/shrub vegetation, if appropriate. Conservation covenant or other mechanism is required to protect the oak woodland from future development.
	Oak removal or significant damage to the health of oak trees as demonstrated by arborist's report.	At a minimum, replace oak trees based on area impacted with new Oregon white oak trees and contact WDFW for additional mitigation.
<p>1 – Impact area is based on the cumulative total of all unmitigated impacts from the effective date of this SMP and is defined as the area of cleared vegetation as measured on the ground.</p> <p>2 – The standards listed in SMC 18.13.057 apply to activities undertaken based on this table. However, for project involving vegetation removal that are not associated with a Shoreline Permit, the Administrator may waive requirements of that section related to deed notices and permanent demarcation for the mitigation area.</p> <p>3 – Replacement planting involves like-for-like replacement of either 1) the species removed or 2) the vegetative layer (strata) as that removed. No invasive vegetation shall be used for replacement purposes.</p> <p>4 – To assist applicants with in determining appropriate mitigation, the City may maintain a list of native vegetation that provide groundcover, understory, and tree canopy cover functions in riparian areas.</p>		

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- f. Mitigation Area, Location. The location of the mitigation area shall:
- i. Be on site unless there is insufficient area on site;
 - ii. Improve an area of low habitat functionality;
 - iii. Be within 50 feet of the OHWM or as close as possible to the shoreline waterbody;
and
 - iv. Prioritize south and west banks of waterbodies to provide shade.
- g. Mitigation Area, Monitoring.
- i. The project shall be monitored annually for 5 years to document plant survivorship.
 - ii. Monitoring reports shall be provided to the Administrator once per year.
 - 10 iii. The planted mitigation area shall achieve a plant survival standard of 80% at the end of 5 years.
 - iv. Monitoring results may require additional/replacement planting to meet the survival standard. If the survival standard is not met, then additional planting may be required.
 - 15 v. In lieu of monitoring, a conservation covenant may be established which prevents future development or alteration within the mitigation area.

6.4.2 Fill

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1. Applicability: Any fill activity conducted within shoreline jurisdiction must comply with the policies and provisions herein.
2. Policies:
- a. Allow fill when it is demonstrated to be the minimum extent necessary to accommodate an allowed shoreline use or development or when associated with a shoreline restoration project and with assurance of no net loss of shoreline ecological functions and processes.
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3. Regulations:
- a. All fills shall be located, designed and constructed to protect shoreline ecological functions and ecosystem-wide processes, including channel migration.
 - b. All fills, except fills for the purpose of shoreline restoration, shall be designed:
 - 30 i. To be the minimum size necessary to implement the allowed use or modification.
 - ii. To fit the topography so that minimum alterations of natural conditions will be necessary.
 - iii. To not adversely affect hydrologic conditions or increase the risk of slope failure, if applicable.
 - iv. To include a temporary erosion and sediment control (TESC) plan, identifying BMPs. Disturbed areas shall be immediately protected from erosion using mulches, hydroseed, or similar methods, and revegetated, as applicable.
 - c. Fills in wetlands, floodways, CMZs or waterward of the OHWM may be allowed only when necessary to support one or more of the following:
 - 35 i. Water-dependent uses.
 - ii. Public Access.
 - 40 iii. Cleanup and disposal of contaminated sediments as part of an interagency environmental clean-up plan.

- iv. Disposal of dredged material considered suitable under, and conducted in accordance with WDNR's Dredged Material Management Program and/or the Dredged Material Management Office of the USACE.
- 45 v. Expansion or alteration of transportation facilities of statewide significance currently located on the shoreline where alternatives to fill are infeasible.
- vi. Mitigation action (environmental or hazard), ecological restoration, beach nourishment, or enhancement project consistent with an approved mitigation or restoration plan.
- 50 d. Unless site characteristics dictate otherwise, fill material within surface waters or wetlands shall be sand, gravel, rock, or other clean material with a minimum potential to degrade water quality and shall be obtained from a state-authorized source.
- e. Upland fills not located within wetlands, floodways, or CMZs may be allowed provided they are:
 - 55 i. Part of an allowed shoreline use or modification, or necessary to provide protection to cultural resources.
 - ii. Located outside applicable setbacks, unless specifically allowed in setbacks.

6.4.3 *Shoreline Stabilization*

- 60 1. Applicability: This section applies to all new, enlarged, or replacement shoreline stabilization as defined in SMP Chapter 7.
- 2. Policies:
 - a. Locate and design new development to avoid the need for future shoreline stabilization to the extent feasible.
 - b. Use structural shoreline stabilization measures only when nonstructural methods are 65 infeasible.
 - c. Ensure soft structural shoreline stabilization measures are used prior to hard stabilization measures unless demonstrated to be insufficient.
 - d. Ensure that the cumulative impacts of existing, new, or enlarged hard shoreline stabilization (e.g., beach starvation, habitat degradation, sediment impoundment, exacerbation of 70 erosion, groundwater impacts, hydraulic impacts, loss of shoreline vegetation, loss of large woody material, restriction of channel movement and creation of side channels, etc.) do not result in a net loss of shoreline ecological functions.
 - e. Allow new or enlarged structural shoreline stabilization only where demonstrated to be necessary to support or protect an allowed primary structure or a legally existing shoreline use that is in danger of loss or substantial damage, or for reconfiguration of the shoreline for 75 mitigation or enhancement purposes.
 - f. Ensure all proposals for structural shoreline stabilization, both individually and cumulatively, do not result in a net loss of ecological functions.
- 80 3. Regulations:
 - General**
 - a. New development shall be designed to avoid the need for future shoreline stabilization where feasible, including the following specific requirements:

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- i. Land divisions shall be designed to ensure that lots created will not require stabilization using a geotechnical analysis of the site and shoreline characteristics.
 - ii. New development shall be adequately setback from steep slopes or bluffs to ensure that stabilization is unnecessary during the life the structure(s).
 - iii. New development that requires shoreline stabilization that causes significant impacts to adjacent or downstream properties is not permitted.
 - iv. Shoreline stabilization structures, both individually and cumulatively, shall not result in a net loss of ecological functions, and shall be the minimum size necessary. Soft approaches shall be used whenever feasible unless demonstrated not to be sufficient to protect primary structures, dwellings, and businesses.
- b. If construction or repair of a shoreline stabilization measure entails vegetation clearing or ground disturbance within the shoreline setback, such disturbance shall be restored according to SMP Section 6.4.1 as quickly as feasible.
- c. A geotechnical report shall be prepared for all new, enlarged, and replacement structural stabilization. The report shall address the need to prevent damage to a primary structure shall meet the following requirements:
- i. Address the necessity for shoreline stabilization by estimated time frames and rates of erosion and report on the urgency associated with the specific situation. As a general matter, hard armoring solutions should not be authorized except when a report confirms that 1) there is a significant possibility that such a structure will be damaged within 3 years as a result of shoreline erosion in the absence of such hard armoring measures, or 2) waiting until the need is immediate would foreclose the opportunity to use measures that avoid impacts on ecological functions.
 - ii. Where the geotechnical report confirms a need to prevent potential damage to a primary structure, but the need is not as immediate as the 3 years, that report may still be used to justify more immediate authorization to protect against erosion using soft or nonstructural measures.
- d. When new, enlarged, or replacement structural shoreline stabilization is demonstrated to be necessary per the above requirements of subsections e and f below, it shall:
- i. Be the minimum size necessary and shall meet no net loss. Soft stabilization measures shall be implemented unless demonstrated not to be sufficient to protect the primary structures, dwellings or businesses.
 - ii. Ensure that publicly financed or subsidized shoreline erosion control measures do not restrict public access except where such access is demonstrated to be infeasible for reasons stated in SMP Section 4.6.3. Ecological restoration and public access improvements shall be incorporated into the stabilization measure, where feasible.
 - iii. Mitigate new erosion control measures, including replacement structures, on feeder bluffs or other actions that affect sediment-producing areas to avoid or, if that is not possible, to minimize adverse impacts to sediment conveyance systems. Where sediment conveyance systems cross jurisdictional boundaries, the City will coordinate shoreline management efforts with Skamania County. If shoreline erosion is threatening existing development, the City will consider formation of a management

125 district or other institutional mechanism to provide comprehensive mitigation for the
adverse impacts of erosion control measures.

New or Enlarged Structural Stabilization

e. New or enlarged structural shoreline stabilization measures shall not be allowed, except
when the following subsections (i through iv), as applicable, are met.

- 130 i. For existing primary structures:
1. The need to protect primary structures from damage due to erosion is conclusively demonstrated through a geotechnical report.
 2. The erosion control structure will not result in a net loss of shoreline ecological functions.
- 135 ii. In support of new non-water-dependent development, including single-family residences, when all of the conditions below apply:
1. The erosion is not being caused by upland conditions, such as drainage or loss of vegetation;
 - 140 2. Nonstructural measures, such as placing the development farther from the shoreline, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient; and
 3. The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report. The damage must be caused by natural processes (e.g., tidal action, currents, wind, waves, etc.).
- 145 iii. In support of water-dependent development when all of the conditions below apply:
1. The erosion is not being caused by upland conditions (e.g., loss of vegetation, drainage, etc.);
 2. Nonstructural measures (e.g., planting vegetation, installing on-site drainage improvements, etc.) are not feasible or not sufficient; and
 - 150 3. The need to protect primary structures from damage due to erosion is demonstrated through a geotechnical report.
- 155 iv. To protect projects for the restoration of ecological functions or for hazardous substance remediation projects pursuant to Chapter 70.105D RCW when nonstructural measures, planting vegetation, or installing on-site drainage improvements, are not feasible or not sufficient to adequately address erosion causes or impacts.

Replacement Structural Stabilization

f. For the purposes of this section, replacement means the construction of a new structure to perform a shoreline stabilization function of an existing structure that can no longer adequately serve its purpose. Additions to or increases in size of existing shoreline stabilization measures shall be considered new structures. An existing shoreline stabilization structure may be replaced with a similar structure if there is a demonstrated need to protect principal uses or structures from erosion caused by currents, tidal action, wind or waves provided the following provisions (i through iv) are met:

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- 165 i. There is a demonstrated need to protect principal uses or structures from erosion caused by currents, tidal action, wind or waves. For replacement stabilization

structures, a geotechnical report is recommended but not required. At a minimum, applicants must demonstrate need by addressing the following:

- 170 1. The structure or use will be at risk from currents, tidal action, wind or waves if the stabilization structure is not replaced;
2. No feasible options exist to move the at-risk structure out of harm's way;
3. The primary structure is well-built and will be viable for a long time after stabilization is provided.
- 175 4. The primary structure is not otherwise at risk because of its location in a flood or geotechnical hazard area and replacing the stabilization structure would not assure the long-term safety of the structure.
- ii. The replacement structure should be designed, located, sized, and constructed to assure no net loss of ecological functions.
- 180 iii. Replacement walls or bulkheads shall not encroach waterward of the OHWM or existing structure unless the residence was occupied prior to January 1, 1992 and there are overriding safety or environmental concerns. In such cases, the replacement structure shall abut the existing shoreline stabilization structure.
- iv. Soft shoreline stabilization measures that provide restoration of shoreline ecological functions may be permitted waterward of the OHWM.

185 **Repair of Shoreline Stabilization**

- g. Normal repair and maintenance of shoreline stabilization is an exempt activity which is authorized under WAC 173-27-040(2)(b). However, for the purposes of this section, repair of a shoreline stabilization measures that exceeds the exemption threshold qualifies as a replacement and is subject to the standards for replacement of stabilization structures, above. A repair to a portion of an existing stabilization structure that has collapsed, eroded away or otherwise demonstrated a loss of structural integrity, and the repair is 50% or greater of the value of the shoreline stabilization measure shall constitute replacement.

190 **6.4.4 Shoreline Restoration**

- 195 1. Applicability: This section applies to all shoreline habitat and natural systems enhancement projects. These projects include those activities proposed and conducted specifically for the purpose of establishing, restoring, or enhancing habitat for priority species in the shoreline.
2. Policies:
 - 200 a. The ecological enhancement and restoration measures projects identified in the Stevenson Shoreline Restoration Plan should be implemented, and all other shoreline habitat and natural systems enhancement projects should be consistent with that plan wherever feasible.
 - b. Ecological enhancement and restoration measures occurring on Stevenson's shorelines should not interfere with the establishment of other preferred shoreline and uses, especially in the Active Waterfront SED.
- 205 3. Regulations:
 - a. Shoreline habitat and natural systems enhancement projects may be permitted in all shoreline environments, provided:
 - i. The project's purpose is the restoration or enhancement of the natural character and ecological functions of the shoreline; and

- 210 ii. It is consistent with the implementation of an approved comprehensive restoration
plan, or the project will provide a proven ecological benefit and is consistent with
this SMP.
- b. To the extent possible, restoration and enhancement shall be integrated and coordinated
with other parallel natural resource management efforts.
- 215 c. Implementation of restoration projects identified in the Stevenson Shoreline Restoration Plan
that are focused on restoring degraded habitat in shoreline jurisdiction shall take precedence
over other restoration projects.
- d. The provisions of this SMP shall not apply where a shoreline restoration project causes or
would cause a landward shift in the OHWM that results in 1) land that had not been
220 regulated under this SMP prior to construction of the restoration project being brought
under shoreline jurisdiction or 2) additional regulatory requirements applying due to a
landward shift in required shoreline buffers or other regulations of this SMP. To obtain this
relief, projects shall satisfy the substantive and procedural requirements of RCW 90.58.580.

6.4.5 *Dredging*

- 225 1. Applicability:
- a. This section applies to new or maintenance dredging activities and disposal of dredge
materials from these activities.
- b. This section is not intended to cover dredging that is incidental to the construction of an
otherwise authorized use or modification (e.g., shoreline crossings, bulkhead replacements).
230 These in-water substrate modifications should be conducted pursuant to applicable general
and specific use and modification regulations of this SMP.
2. Policies: Dredging and dredge material disposal should be done in a manner that avoids or
minimizes significant ecological impacts, and impacts that cannot be avoided should be
mitigated in a manner that assures no net loss of shoreline ecological functions.
- 235 3. Dredging Regulations:
- a. New development shall be located and designed to avoid or minimize the need for new and
maintenance dredging.
- b. Dredging shall only be permitted:
- 240 i. In conjunction with a water-dependent use of water bodies or adjacent shorelands.
- ii. As part of the development of utilities or essential public facilities when there are no
feasible alternatives;
- iii. To establish, expand, relocate or reconfigure navigation channels for existing
245 navigational uses, only where necessary for assuring safe and efficient
accommodation of existing navigational uses and then only when significant
ecological impacts are minimized and when mitigation is provided.
- iv. As maintenance dredging of established navigation channels and basins, restricted
to a previously dredged area and/or an existing authorized dredge prism (specified
location, depth, and width).
- v. For projects associated with MTCA or CERCLA project or with a significant habitat
restoration project approved by a Shoreline Conditional Use Permit (SCUP),

250 otherwise dredging for fill materials is prohibited. Disposal of such dredged
materials are subject to the requirements below.

- c. Removal of gravel for flood control shall only be allowed if i) biological and
geomorphological study demonstrates a long-term benefit to flood hazard reduction, ii) no
net loss of ecological functions occurs, and iii) extraction is part of a comprehensive flood
255 management solution.

4. Dredge Disposal Regulations:

- i. When a dredge activity is conducted for the primary purpose of obtaining fill
material, the disposal of dredged materials shall be waterward of the OHWM.
ii. Disposal of dredged materials on shorelands or associated wetlands shall first obtain
260 a SCUP and must demonstrate the suitability of the material for a beneficial use
identified in a regional interagency dredge material management plan or watershed
management plan.
iii. When located within a channel migration zone, disposal of dredged materials shall
be discouraged and shall only be allowed with a SCUP.

265 **6.4.6 Breakwaters, Jetties, Groins, and Weirs**

1. Applicability: This section applies to new, expanded or replacement breakwaters, jetties, groins,
and weirs as those are defined in SMP Chapter 7.
2. Policies:
a. Allow breakwaters, jetties, groins, and weirs to be located waterward of the OHWM only
270 where necessary to support water-dependent uses, public access, shoreline stabilization, or
other specific public purpose.
b. Consider alternative structures with less impact where physical conditions make such
alternatives feasible.
3. Regulations:
a. Except when for ecological protection/restoration, new, expanded or replacement structures
275 shall only be allowed with a SCUP.
b. New expanded or replacement structures shall demonstrate that they will protect critical
areas, will not result in a net loss of shoreline ecological functions, and will support water-
dependent uses, public access, shoreline stabilization, or other specific public purpose.
280 c. Breakwaters, jetties, groins, and weirs shall be limited to the minimum size necessary.
d. Breakwaters, jetties, groins, and weirs shall be designed to protect critical areas.
e. Proposed designs for new, expanded or replacement structures shall be designed by
qualified professionals, including both an engineer and a biologist.

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Chapter 7 – Definitions

As used in this SMP, the words below have the meaning given here unless the context clearly dictates otherwise.

7.1 Abbreviations & Acronyms

- 5 **ANSI** – American National Standards Institute
 BMP – Best Management Practice
 CERCLA – The Comprehensive Environmental Response, Compensation, and Liability Act (“Superfund”);
 1986 amendments are known as Superfund Amendments and Reauthorization Act or SARA
 CMZ – Channel Migration Zone
10 **DBH** – Diameter at breast height, 4.5 feet above existing grade
 FEMA – Federal Emergency Management Agency
 MTCA – The Model Toxics Control Act
 OFM – Washington Office of Financial Management
 OHWM – Ordinary High Water Mark
15 **RCW** – Revised Code of Washington
 SEPA – Washington State Environmental Policy Act, Chapter 43.21C RCW.
 SMA – The Shoreline Management Act, Chapter 90.58 RCW, as amended
 SMP – Shoreline Master Program
 WAC – Washington Administrative Code
20 **WDFW** – Washington Department of Fish & Wildlife
 WDNR – Washington Department of Natural Resources
 USACE – United States Army Corps of Engineers

7.2 Words & Phrases

25 **Accessory Use** or **Accessory Structure** – A use incidental and subordinate to the principal use and
 located on the same lot or in the same building as the principal use, but is not an appurtenance use as
 defined in this Chapter.

30 **Adjacent** – Immediately adjoining (in contact with the boundary of the influence area) or within a
 distance less than that needed to separate activities from critical areas to ensure protection of the
 functions and values of the critical areas. Adjacent shall mean any activity or development located: 1)
 on site immediately adjoining a critical area; or 2) a distance equal to or less than the required critical
 area buffer width and building setback.

35 **Agricultural Activities** – Agricultural uses and practices including, but not limited to: Producing,
 breeding, or increasing agricultural products; rotating and changing agricultural crops; allowing land
 used for agricultural activities to lie fallow in which it is plowed and tilled but left unseeded; allowing
 land used for agricultural activities to lie dormant as a result of adverse agricultural market conditions;
 allowing land used for agricultural activities to lie dormant because the land is enrolled in a local, state,
 or federal conservation program, or the land is subject to a conservation easement; conducting
 agricultural operations; maintaining, repairing, and replacing agricultural equipment; maintaining,

40 repairing, and replacing agricultural facilities, provided that the replacement facility is no closer to the shoreline than the original facility; and maintaining agricultural lands under production or cultivation.

Agricultural Land – Those specific land areas on which agriculture activities are conducted.

Alteration – See SMC 18.13.010 – Definitions.

Anadromous Fish – See SMC 18.13.010 – Definitions.

45 **Applicant** – A person who files an application for a permit and who is either the owner of the land on which that proposed activity would be located, a contract purchaser, or the authorized agent of such a person.

50 **Appurtenance** – A structure or development which is necessarily connected to the use and enjoyment of a single-family residence and is located landward of the OHWM and also of the perimeter of any wetland. On a statewide basis, normal appurtenances include a garage, deck, driveway, utilities, fences, installation of a septic tank and drain field, and grading which does not exceed 250 cubic yards, except to construct a conventional drain field, and which does not involve placement of fill in any wetland or waterward of the OHWM (WAC 173-27-040(2)(g)). Residential appurtenances do not include bulkheads, other shoreline modifications or overwater structures.

55 **Aquaculture** – The culture or farming of fish, or other aquatic plants and animals. Aquaculture does not include upland finfish -rearing facilities, which are considered agriculture.

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

60 **Archaeological Artifact**– An object that comprises the physical evidence of an indigenous and subsequent culture, including material remains of past human life, including monuments, symbols, tools, facilities, graves, skeletal remains, and technological byproducts.

Archaeological Resource/Site– A geographic locality in Washington, including, but not limited to, submerged and submersible lands and the bed of the sea within the state’s jurisdiction, that contains archaeological artifacts.

65 **Archaeological Site Inspection** – A preliminary archaeological investigation of a project area which includes, but is not limited to, archaeological databases, walking the site in a series of transects, and shovel test probes of the subsurface as necessary. When archaeological deposits are identified, sufficient shovel test probe examination shall be conducted to determine whether the discovery meets the definition of an archaeological site in RCW 27.53.030. A Washington State Archaeological Site Inventory form shall be completed and submitted for the identified site. Site inspection reports shall be
70 professionally reasoned and sufficiently detailed to allow another archaeologist to repeat the investigation and reach a similar conclusion.

Archaeological Survey – A formal archaeological study that includes background research and adheres to the Washington State Department of Archaeology and Historic Preservation (DAHP).

75 **Associated Wetland** – Those wetlands that are in proximity to and either influence, or are influenced by tidal waters or a lake or stream subject to the SMA. Refer to RCW 90.58.030.

Beach – The area of unconsolidated material at the interface between a waterbody and dry land.

Best Management Practice or BMP – A conservation practice or system of practices and management measures that: (a) control soil loss and reduce water quality degradation caused by high concentrations of nutrients, animal waste, toxics, or sediment; (b) minimize adverse impacts to surface water and ground water flow and circulation patterns and to the chemical, physical, and biological characteristics of wetlands; (c) protect trees, vegetation, and soils designated to be retained during and following site construction and use native plant species appropriate to the site for revegetation of disturbed areas; and (d) provide standards for proper use of chemical herbicides within critical areas.

Boat Launch or Boat Ramp – A graded slope, slab, pad, plank, or rails providing access in and out of the water for boats or other watercraft by means of a trailer, hand, or mechanical device. Boat launches are categorized based upon whether the access they provide accommodates motorized watercraft.

Boating Facility – Uses and structures (e.g., marinas, moorages, floats, mooring buoys, boat launches, etc.) designed and intended to support boats and water craft. This definition includes components related to the above uses (e.g., docks, piers, gangways, etc.).

Breakwater – An offshore structure generally built parallel to the shore that may or may not be connected to land. Its primary purpose is to protect a harbor, moorage, or navigational activity from wave and wind action by creating a still-water area along the shore. A secondary purpose is to protect the shoreline from wave- caused erosion.

Buffer – See SMC 18.13.010 – Definitions.

Canopy Cover – See SMC 18.13.010 – Definitions.

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

City – The City of Stevenson or the City designee or authorized agent.

Clearing – The destruction or removal of vegetation ground cover, shrubs and trees, including but not limited to, root material removal and/or topsoil removal.

Commercial Development – Those uses that are involved in business trade (e.g., occupied building space used for the conducting of retail, office, artisan, restaurant, lodging, childcare, professional business, government services, entertainment, privately operated recreational uses, etc.).

Commercial Use – A business use or activity involving retail or wholesale marketing of goods and services. Examples of commercial uses include restaurants, offices, and retail shops.

Comprehensive Plan – The document, including maps adopted by the City Council that outlines the City's goals and policies relating to management of land use and development.

Conditional Use – A use, development, or substantial development which is classified as a conditional use or is not classified within this SMP (WAC 173-27-030(4)).

Critical Areas – See SMC 18.13.010 – Definitions.

Critical Freshwater Habitat – Designated under chapter 36.70A RCW, including streams, rivers, wetlands, and lakes, their associated CMZs, and floodplains.

115 **Cumulative Impact** – The combined, incremental effects of human activity on ecological or critical areas functions and values. Cumulative impacts result when the effects of an action are added to or interact with the effects of other actions in a particular place and within a particular time. It is the combination of these effects, and any resulting environmental degradation, that should be the focus of cumulative impact analysis and changes to policies and permitting decisions.

120 **Cultural Resources** – Archeological and historical sites and artifacts, and traditional areas or items of religious, ceremonial and social uses for tribal members and citizens of Washington.

Degrade – To scale down in desirability or salability, to impair in respect to some physical property or to reduce in structure or function.

125 **Development** – A use consisting of the construction or exterior alteration of structures; dredging; drilling; dumping; filling; removal of any sand, gravel, or minerals; bulkheading; driving of piling; placing of obstructions; or any project of a permanent or temporary nature which interferes with the normal public use of the surface of the waters of the state subject to Chapter 90.58 RCW at any state of water level (RCW 90.58.030(3d3a)).

Dock – A landing or moorage facility for watercraft. Private leisure decks, storage facilities or other appurtenances are not included in this definition.

130 **Dock, Single User Residential** – A dock that is used for non-commercial use and enjoyment of a single-family residential lot.

If a dock is 1) used for commercial use or 2) by more than one single-family residential lot it is a joint-use moorage.

135 **Dredging** – The removal or displacement of earth or sediment (gravel, sand, mud, silt and/or other material or debris) from a river, stream, or associated wetland. "Maintenance dredging" includes the removal of earth or sediment within established navigation channels and basins.

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

140 **Ecologically Intact Shorelines** – Those shoreline areas that retain the majority of their natural shoreline functions, as evidenced by the shoreline configuration and the presence of native vegetation. Generally, but not necessarily, ecologically intact shorelines are free of structural shoreline modifications, structures, and intensive human uses. In forested areas, they generally include native vegetation with diverse plant communities, multiple canopy layers, and the presence of large woody debris available for recruitment to adjacent water bodies. Recognizing that there is a continuum of ecological conditions ranging from near natural conditions to totally degraded contaminated sites, this term is intended to delineate those shoreline areas that provide valuable functions for the larger aquatic and terrestrial environments which could be lost or significantly reduced by human development. Whether or not a shoreline is ecologically intact is determined on a case-by-case basis, and the term may apply to all shoreline areas meeting the above criteria ranging from larger reaches
145
150 that may include multiple properties to small areas located within a single property.

Emergency – An unanticipated and imminent threat to public health, safety, or the environment which requires immediate action within a time too short to allow full compliance with the master program. Emergency construction is construed narrowly as that which is necessary to protect property from the elements (RCW 90.58.030(3eiii) and WAC 173-27-040(2d)).

EII – Extensions of piers, often in a U-shape or L shape, to provide additional space for mooring watercraft.

Enhancement – Alteration of an existing resource to improve or increase its characteristics and processes without degrading other existing functions. Enhancements are to be distinguished from resource creation or restoration projects.

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

Erosion Hazard Area – Those areas that, because of natural characteristics, including vegetative cover, soil texture, slope gradient, and rainfall patterns, or human-induced changes to such characteristics, are vulnerable to erosion.

Fair Market Value – The open market bid price for conducting the work, using the equipment and facilities, and purchase of the goods, services and materials necessary to accomplish the development. This would normally equate to the cost of hiring a contractor to undertake the development from start to finish, including the cost of labor, materials, equipment and facility usage, transportation and contractor overhead and profit. The fair market value of the development shall include the fair market value of any donated, contributed or found labor, equipment or materials (WAC 173-27-030(8)).

Feasible – For the purpose of this SMP, an action (e.g., a development project, mitigation, or preservation requirement, etc.) meets all of the following conditions: (a) the action can be accomplished with technologies and methods that have been used in the past in similar circumstances, or studies or tests have demonstrated in similar circumstances that such approaches are currently available and likely to achieve the intended results; (b) the action provides a reasonable likelihood of achieving its intended purpose; and (c) the action does not physically preclude achieving the project's primary intended legal use. In cases where certain actions are required unless they are infeasible, the burden of proving infeasibility is on the applicant. In determining an action's infeasibility, the City and State may weigh the action's relative public costs and public benefits, considered in the short- and long-term time frames.

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

Fish Acclimation Facility – A pond, net pen, tank, raceway, or other natural feature or artificial structure used for rearing and imprinting juvenile fish to a body of water before their release.

Fish and Wildlife Habitat Conservation Areas – Areas that serve a critical role in sustaining needed habitats and species for the functional integrity of the ecosystem, and which, if altered, may reduce the likelihood that the species will persist over the long term. These areas may include, but are not limited to, rare or vulnerable ecological systems, communities, and habitat or habitat elements including seasonal ranges, breeding habitat, winter range, and movement corridors; and areas with high relative

population density or species richness. These areas may also include locally important habitats and species. Fish and wildlife habitat conservation areas do not include such artificial features or constructs as irrigation delivery systems, irrigation infrastructure, irrigation canals, or drainage ditches that lie within the boundaries of, and are maintained by, a port district or an irrigation district or company.

195 **Fish Hatchery** – A facility designed for the artificial breeding, hatching and rearing through the early life stages of finfish.

Float – A floating structure that is moored, anchored, or otherwise secured in the water offshore, and that provides a landing for water dependent recreation (e.g., a platform used for swimming and diving) or as a moorage for watercraft.

200 **Floating Home** – A single-family dwelling unit constructed on a float, that is moored, anchored, or otherwise secured in waters, and is not a vessel, even though it may be capable of being towed.

Flood – A general and temporary condition of partial or complete inundation of normally dry land areas from: 1. the overflow of inland or tidal waters; 2. the unusual and rapid accumulation or runoff of surface waters from any sources.

205 **Flood Insurance Rate Map** or **FIRM** – The official map on which the Federal Insurance Administration has delineated many areas of flood hazard, floodways, and the risk premium zones (CFR 44 Part 59).

Floodplain – An area synonymous with 100-year floodplain and means the land area susceptible to being inundated by stream derived waters with a 1 percent chance of being equaled or exceeded in any given year. The limits of this area are based on flood regulation ordinance maps or a reasonable method that meets the objectives of the SMA (WAC 173-26-020).

210 **Floodway** – The area, as identified in this SMP, that either: i) Has been established in FEMA flood insurance rate maps or floodway maps; or ii) consists of those portions of a river valley lying streamward from the outer limits of a watercourse upon which flood waters are carried during periods of flooding that occur with reasonable regularity, although not necessarily annually, said floodway being identified, under normal condition, by changes in surface soil conditions or changes in types or quality of vegetative ground cover condition, topography, or other indicators of flooding that occurs with reasonable regularity, although not necessarily annually. Regardless of the method used to identify the floodway, the floodway does not include those lands that can reasonably be expected to be protected from flood waters by flood control devices maintained by or maintained under license from the federal government, the state, or a political subdivision of the state.

215 **Forest Practices** – Any activity conducted on or directly related to forest land and relating to growing, harvesting, or processing timber. These activities include but are not limited to: road and trail construction, final and intermediate harvesting, precommercial thinning, reforestation, fertilization, prevention and suppression of disease and insects, salvage of trees, and brush control (WAC 222-16-010(21)). Forest practices do not include forest species seed orchard operations and intensive forest nursery operations; or preparatory work (e.g., tree marking, surveying, road flagging, etc.); or removal or harvest of incidental vegetation from forest lands (e.g., berries, ferns, greenery, mistletoe, herbs, mushrooms, and other products which cannot normally be expected to result in damage to forest soils, timber or public resources).

230 **Functions and Values** – See SMC 18.13.010 – Definitions.

Gangway – A walkway that connects a pier to a dock; often used in areas where the water level changes because of tidal or seasonal variations.

235 **Garden** – An area devoted to the cultivation of soil or production of crops in a manner incidental and subordinate to the principal use of the property. Examples include private residential gardens, community gardens, and or pea patches associated with a public park.

Geologically Hazardous Areas – Areas that because of their susceptibility to erosion, sliding, earthquake, or other geological events (as designated by WAC 365-190-080(4)) may not be suited to development consistent with public health, safety or environmental standards. Types of geologically hazardous areas include erosion, landslide, seismic, volcanic hazards, and mine.

240 **Geotechnical Report** or **Geotechnical Analysis** – A scientific study or evaluation conducted by a qualified expert that includes a description of the ground and surface hydrology and geology, the affected land form and its susceptibility to mass wasting, erosion, and other geologic hazards or processes, conclusions and recommendations regarding the effect of the proposed development on geologic conditions, the adequacy of the site to be developed, the impacts of the proposed
245 development, alternative approaches to the proposed development, and measures to mitigate potential site-specific and cumulative geological and hydrological impacts of the proposed development, including the potential adverse impacts to adjacent and down-current properties. Geotechnical reports shall conform to accepted technical standards and must be prepared by qualified professional engineers or geologists who have professional expertise about the regional and local
250 shoreline geology and processes.

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

255 **Groin** – A barrier-type structure extending from the backshore or stream bank into a water body. Its purpose is to protect a shoreline and adjacent upland by influencing the movement of water and/or deposition of materials. This is accomplished by building or preserving an accretion beach on its up drift side by trapping littoral drift. A groin is relatively narrow in width but varies greatly in length. A groin is sometimes built in a series as a system and may be permeable or impermeable, high or low, and fixed or adjustable.

260 **Ground Water** – Water in a saturated zone or stratum beneath the surface of land or a surface water body.

Groundcover – See SMC 18.13.010 – Definitions.

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

Hazard Tree – See SMC 18.13.010 – Definitions.

265 **Historic Site** – Those sites that are eligible or listed on the Washington Heritage Register, National Register of Historic Places, or any locally developed historic register formally adopted by the City Council.

Horticulture or Horticultural Purposes – The cultivation of a garden, orchard, or nursery; the cultivation of flowers, fruits, vegetables or ornamental plants.

270 **Hydroelectric Facilities** – Facilities, uses, or structures and associated infrastructure having electrical generation using the energy of water as their primary purpose. Facilities typically include, but are not limited to: dams; spillways; electrical lines and poles; powerhouses; electrical substations; roads for access and maintenance; debris or navigational booms; buoys; fish collection, diversion, and exclusion structures and nets; and public safety infrastructure such as signs.

275 **Hyporheic Zone** – An area under or beside a stream channel or floodplain that contributes water to the stream and performs ecological functions (e.g., removing excessive nutrients and toxic compounds, water storage, support of vegetation, sediment storage, maintenance of base flows, etc.).

280 **Impervious Surface Coverage** – Any non-vertical surface artificially covered or hardened so as to prevent or impede the percolation of water into the soil mantle including, but not limited to, roof tops, swimming pools, paved or graveled roads and walkways or parking areas and excluding landscaping and surface water retention/detention facilities.

Industrial Use – A use involving the production, processing, manufacturing, or fabrication of goods or materials. Warehousing and storage of materials or production is considered part of the industrial process. Water-oriented industrial uses include port areas that ship and receive products along the water and adjacent upland uses which benefit from proximity to the water.

285 **Institutional Use** – A use and/or related structure(s) for the provision of educational, medical, cultural, public safety, social and/or governmental services to the community (e.g., cemeteries, schools, colleges, museums, community centers, etc.).

290 **Instream Structure** – A structure placed by humans within a stream or river waterward of the OHWM that either causes or has the potential to cause water impoundment or the diversion, obstruction, or modification of water flow. Instream structures may include those for hydroelectric generation, irrigation, water supply, flood control, transportation, utility service transmission, fish habitat enhancement, or other purpose. Overwater structures as defined herein and stormwater and wastewater outfalls are not instream structures.

295 **Jetty** – A structure usually projecting out into the water for the purpose of protecting a navigation channel, a harbor, or to influence water currents.

Joint-Use Moorage – A moorage constructed and utilized by more than one waterfront property owner, homeowner's association or other public or quasi-public agency. Joint-use moorage includes moorage for pleasure craft and/or landing for water sports for use in common by shoreline residents or for use by patrons of a public park or quasi public recreation area.

300 If a joint-use moorage 1) is used for storing, berthing and securing more than 10 motorized boats or watercraft or 2) includes a swinging boom or davit-style hoist, then it is a marina.

Lake – An area permanently inundated by water in excess of 2 meters deep and greater than 20 acres in size measured at the OHWM.

305 **Leisure Deck, Private** – An overwater structure associated with a private, typically single-family residential, use of the shoreline. Private leisure decks are designed or intended for uses that are unnecessary for the moorage of a boat or watercraft (e.g., seating, cooking, viewing, storage, etc.).

310 **Leisure Pier, Public** – An overwater or nearshore structure that is 1) accessible to the public and 2) designed or intended for uses that are unnecessary for the moorage of a boat or watercraft (e.g., seating, pedestrian travel, viewing, etc.). Public leisure piers typically support view platforms, fishing and other water-dependent shoreline activities.

315 **Livaboard Vessel** – A licensed vessel used primarily as a residence; if the vessel is used as a means of transportation or recreation, those are secondary or subsidiary uses. Vessels shall be considered a residence if used for overnight accommodation for more than 15 nights in a 1-month period, or when the occupant or occupants identify the vessel or the facility where it is moored as the residence for voting, mail, tax, or similar purposes.

320 **Marina** – A private or public facility providing the purchase or lease of a slip for storing, berthing and securing more than 10 motorized boats or watercraft, including both long-term and transient moorage. Marinas may include accessory facilities for providing incidental services to users of the marina (e.g., waste collection, boat sales or rental activities, retail establishments providing fuel service, repair or service of boat, etc.).

May – The action is acceptable, provided it conforms to the provisions of this SMP.

Mining – The removal of sand, gravel, soil, minerals, and other earth materials for commercial and other uses (WAC 173-26-241).

325 **Mitigation** – The process of avoiding, minimizing or compensating for adverse environmental impact(s) of a proposal on a critical area. The type(s) of mitigation required is dependent on the mitigation sequence in SMP Section 4.3.

330 **Modification or Shoreline Modification** – Those actions that modify the physical configuration or qualities of the shoreline area, usually through the construction of a physical element (e.g., dike, breakwater, pier, weir, dredged basin, fill, bulkhead, or other shoreline structure) or other actions (e.g., clearing, grading, application of chemicals, etc.).

Monitoring – The collection of data by various methods for the purpose of understanding natural systems and features, evaluating the impact of development proposals on such systems, and/or assessing the performance of mitigation measures imposed as conditions of development.

335 **Moorage Facility**– In-water, over-water, or nearshore structures used by a ship, boat, or other watercraft to secure the watercraft or keep it from floating away. These structures typically include, but are not limited to: piers and docks and portions thereof (such as ells, floats, and gangways); mooring buoys; boathouses; mooring piles; lifts or boat lifts; canopies; boat launch; launch/moorage rails or railways; jet ski floats; boat dry docks; and boat tie downs.
See also marina, joint-use moorage, single-user residential dock, boat launch, and mooring buoy.

340 **Mooring Buoy** – A floating object anchored to the bottom of a waterbody that provides tie up capabilities for boats or watercraft.

Must – A mandate; the action is required.

Native– See SMC 18.13.010 – Definitions.

345 **Nonconforming Use** – A shoreline use or development which was lawfully constructed or established
prior to the effective date of the SMA or this SMP, or amendments thereto, but which does not now
conform to the use and development standards contained in this SMP. A nonconforming use is also
one which is listed as a conditional use in this SMP but which existed prior to the adoption of this SMP
or any relevant amendments and for which a Shoreline Conditional Use Permit has not been obtained.
350 For the purposes of this SMP, existing roads which do not meet the setback standards of this SMP
(whether asphalt, gravel, or dirt) are considered nonconforming uses.

355 **Ordinary High Water Mark** or **OHWM** – That mark that will be found by examining the bed and
banks and ascertaining where the presence and action of waters are so common and usual, and so
long continued in all ordinary years, as to mark upon the soil a character distinct from that of the
abutting upland, in respect to vegetation as that condition existed on June 1, 1971, as it may have
naturally changed thereafter, or as it may change thereafter in accordance with permits issued by a
local government or Ecology: provided that in any area where the OHWM cannot be found, the OHWM
adjoining salt water shall be the line of mean higher high tide and the OHWM adjoining fresh water
shall be the line of mean high water.

360 **Oregon White Oak Woodland** – A priority habitat involving stands of pure oak or oak/conifer
associations where canopy coverage of the oak component of the stand is 25 percent; or where total
canopy coverage of the stand is less than 25 percent, but oak accounts for at least 50 percent of the
canopy coverage present. The latter is often referred to as an oak savanna. East of the Cascades,
priority oak habitat is stands 5 acres in size. In urban or urbanizing areas, single oaks, or stands of oaks
less than 1 acre, may also be considered priority habitat when found to be particularly valuable to fish
365 and wildlife (i.e., they contain many cavities, have a large diameter at breast height [DBH], are used by
priority species, or have a large canopy).

370 **Overwater Structure** – A structure or other construction located waterward of the OHWM or a
structure or other construction erected on piling above the surface of the water, or upon a float.
Overwater structures include many boating facilities (e.g., piers, docks, mooring buoys, etc.) as well as
components related to those facilities (e.g., gangways, ells, floats, etc.)

Pier – An overwater structure that adjoins the shoreline built on a fixed platform to provide access and
a landing or moorage place for commercial, industrial and pleasure watercraft.

Port – A center for waterborne commerce and traffic. This term is distinct from the Port of Skamania
County which is a municipal corporation of the State of Washington.

375 **Priority Habitat** – Habitat types or elements with unique or significant value to one or more species as
classified by WDFW.

380 **Professional Archaeologist** – A person with qualifications meeting the federal secretary of interior's
standards for a professional archaeologist. Archaeologists not meeting this standard may be
conditionally employed by working under the supervision of a professional archaeologist for a period
of four years provided the employee is pursuing qualifications necessary to meet the federal Secretary
of the Interior standards for a professional archaeologist. During this four-year period, the professional
archaeologist is responsible for all findings. The four-year period is not subject to renewal.

385 **Public Access** – The ability of the general public to reach, touch, and enjoy the water's edge, to travel on the waters of the state, and to view the water and the shoreline from adjacent locations. Refer to WAC 173-26-221(4). In the context of shoreline regulation, public access also includes the ability to view the water from adjacent locations.

Public Use – To be made available daily to the general public on a first-come, first-served basis, and may not be leased to private parties on any more than a day use basis. Refer to WAC 332- 30-106.

Qualified Professional – See SMC 18.13.010 – Definitions.

390 **Reasonable Use** – A legal concept articulated by federal and state courts in regulatory taking cases.

Recreational Uses – Public or private facilities meant for the enjoyment of the public and can include community or commercial facilities for recreational activities (e.g., hiking, fishing, photography, viewing, birdwatching, etc.) and more intensive uses (e.g., parks with sports facilities and other outdoor recreation areas).

395 **Residential Development** – Development which is primarily devoted to or designed for use as a dwelling(s). Residential development includes single-family development, multi-family development and the creation of new residential lots through land division.

400 **Restoration, Restore, or Ecological Restoration** – The re-establishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including, but not limited to, re-vegetation, removal of intrusive shoreline structures and removal or treatment of toxic materials. For the purposes of permitting, proposals for fish acclimation facilities are considered a form of restoration. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre- European settlement conditions.

405 **Review Activity-** Those activities that would be subject to review by the City. This definition includes a) new or expanded shoreline developments, modifications, and uses, b) the subdivision and short subdivision of real property, c) application of pesticides, fertilizers and/or other chemicals, d) normal maintenance or repair of existing shoreline development, modifications, and uses, and e) other activities as specifically described in this SMP. This definition does not include activities occurring as an inherent result of an approved or nonconforming shoreline development, modification, and or use (e.g. delivery and sales in commercial and industrial developments, eating and sleeping in residential developments, recreational activities on recreational lands, etc.).

410 **Riparian** – Of, on, or pertaining to the banks of a river, stream or lake.

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

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

Salmonid –A member of the fish family Salmonidae (e.g., chinook, Coho, chum, sockeye, and pink salmon; cutthroat, brook, brown, rainbow, and steelhead trout; kokanee; native char [bull trout and Dolly Varden], etc.).

420 **Sediment** – The fine grained material deposited by water or wind.

Setback – A required distance separating shoreline uses, developments, or activities from the shoreline measured horizontally upland from and perpendicular to the OHWM. Setbacks help assure that development is located a safe distance from bluffs, river banks, and other natural features, including buffers.

425 **Shall** – A mandate; the action is required.

Shorelands or **Shoreland Area** – Those lands extending landward for 200 feet in all directions as measured on a horizontal plane from the OHWM; floodways and contiguous floodplain areas landward 200 feet from such floodways; and all wetlands and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of this chapter; the same to be designated as to location by Ecology. Optional areas allowed by RCW 90.58.030 are not included by the City.

430

Shoreline Administrator or **Administrator** – The person appointed by the Mayor or the Mayor’s designee to administer the provisions this SMP.

Shoreline Habitat and Natural Systems Enhancement Projects – those activities proposed and conducted specifically for the primary purpose of establishing, restoring, or enhancing habitat for priority species in the shoreline.

435

Shoreline Jurisdiction – All of the geographic areas covered by the SMA, related rules, and this SMP. Also, such areas within a specified local government’s authority under the SMA.

Shoreline Permit – A shoreline substantial development, shoreline conditional use, or shoreline variance permit or any combination or revision thereof.

440

Shoreline Stabilization – actions taken to address erosion impacts to property and dwellings, businesses, or structures caused by natural processes (e.g., current, flood, tides, wind, wave action, etc.). These actions include structural and non-structural methods.

Shoreline Stabilization , Nonstructural - methods include building setbacks, relocation of the structure to be protected, ground water management, and/or planning and regulatory measures to avoid the need for structural stabilization.

445

Shoreline Stabilization, Structural - methods can be “hard” or “soft. Hard structural stabilization measures refer to those with solid, hard surfaces, such as concrete bulkheads. These static structures are traditionally constructed of rock, concrete, wood, metal, or other materials that deflect, rather than absorb, wave energy. Soft structural measures rely on softer materials (e.g., vegetation, drift logs, gravel, etc.). They are intended to absorb wave energy, mimicking the function of a natural beach. Examples of soft and hard stabilization techniques are listed below.

450

Soft Shoreline Stabilization	Hard Shoreline Stabilization
Vegetation enhancement	Riprap and rock revetments
Upland drainage control	Gabions
Bioengineering/biotechnical measures	Groins
Beach enhancement	Retaining walls and bluff walls
Anchor trees	Bulkheads
Natural channel design methods	Seawalls

455 **Shoreline Statement of Exemption** – A letter generated by the shoreline administrator for an exempt activity under WAC 173-27-040 acknowledging the applicant’s compliance with the SMP.

Shorelines – All of the water areas of the state, including reservoirs and their associated shorelands, together with the lands underlying them, except those areas excluded under RCW 90.58.030(2)(d).

Shorelines of Statewide Significance – A select category of shorelines of the state, defined in RCW 90.58.030(2)(f), including larger lakes and rivers with higher flow.

460 **Shorelines of the State** – The total of all “shorelines” and “shorelines of statewide significance” within the state.

Should – A strong preference; a particular action is required unless there is a demonstrated, compelling reason, based on a policy of the SMA and this SMP, against taking the action.

Significant Tree – See SMC 18.13.010 – Definitions.

465 **Single-Family Residence** – A detached dwelling designed for and occupied by one family and including those structures and developments within a contiguous ownership which are ordinary appurtenances.

470 **Soil Bioengineering** – An applied science that combines structure, biological and ecological concepts to construct living structures that stabilizes the soil to control erosion, sedimentation and flooding using live plant materials as a main structural component.

Solid Waste – All garbage, rubbish trash, refuse, debris, scrap, waste materials and discarded materials of all types whatsoever, whether the sources be residential or commercial, exclusive of hazardous wastes, and including any and all source-separated recyclable materials and yard waste.

475 **Steep Slope** – Any slope 30 percent or steeper within a vertical elevation change of at least 10 feet. A slope is defined by establishing its toe and top and is measured by averaging the inclination over at least 10 feet of vertical relief.

Stream – See SMC 18.13.010 – Definitions.

480 **Substantial Development** – Any development of which the total cost or fair market value exceeds \$7,047, or any development which materially interferes with the normal public use of the water or shorelines of the state. The dollar threshold established here is adjusted for inflation by OFM every five years, beginning July 1, 2007, based upon changes in the consumer price index during that time period, as defined by RCW 90.58.030(3)(e). Some activities shall not be considered substantial developments for the purpose of this SMP; see also SMP Chapter 2.

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

485 **Transportation Facilities** – Those structures and developments that aid in land and water surface movement of people, goods, and services. They include roads and highways, bridges and causeways, bikeways, trails, and railroad facilities.

Unavoidable – Adverse impacts that remain after all appropriate and practicable avoidance and minimization has been achieved.

- 490 **Understory** – See SMC 18.13.010 – Definitions.
- Upland** – Generally described as the dry land area above and landward of the OHWM.
- Upland Finfish Rearing Facilities** – Those private facilities not located within waters of the state where finfish are hatched, fed, nurtured, held, maintained, or reared to reach the size of commercial market sale. This definition shall include fish hatcheries, rearing ponds, spawning channels, and other similarly constructed or fabricated facilities. (Upland finfish-rearing facilities are included in the SMA definition of agricultural activities, not aquaculture [RCW 90.58.065]). Upland finfish and upland finfish rearing facilities are not defined in the SMA or implementing WAC.
- 495
- Use or Shoreline Use** –The activities, functions, and/or structures for which a shoreline property is designed, arranged or intended, or for which it is occupied or maintained, let or leased. For the purposes of this SMP, activities, functions, and structures may also be referred to as uses, developments, and/or modifications.
- 500
- Utilities** – Services and facilities that produce, convey, store, process or dispose of electric power, oil, gas, water, stormwater, sewage, waste, communications, and similar.
- Utilities, Accessory** – Utilities composed of small-scale distribution and collection facilities connected directly to development within the shoreline area. Examples include local power, telephone, cable, gas, water, sewer and stormwater service lines.
- 505
- Utilities, Primary** – Utilities comprising trunk lines or mains that serve neighborhoods, areas and cities. Examples include solid waste handling and disposal sites, water transmission lines, sewage treatment facilities, sewage lift stations and mains, power generating or transmission facilities, gas storage and transmission facilities and stormwater mains and regional facilities.
- 510
- Variance** – A way by which an adjustment is made in the application of the specific regulations of this title to a particular piece of property, which property, because of special circumstances applicable to it, is deprived of privileges commonly enjoyed by other properties in the same zone or vicinity and which adjustment remedies disparity in privileges. A variance is a form of special exception.
- 515
- Vegetation** – See SMC 18.13.010 – Definitions.
- Water Quality** –The physical characteristics of water within shoreline jurisdiction, including water quantity, hydrological, physical, chemical, aesthetic, recreation-related, and biological characteristics. Where used in this chapter, the term “water quantity” refers only to development and uses regulated under this chapter and affecting water quantity, such as impermeable surfaces and stormwater handling practices. Water quantity, for purposes of this chapter, does not mean the withdrawal of ground water or diversion of surface water pursuant to RCW 90.03.250 through RCW 90.03.340.
- 520
- Water-Dependent Use** –A use or a portion of a use which cannot exist in any other location and is dependent on the water by reason of the intrinsic nature of its operations. Examples of water-dependent uses may include moorage structures (including those associated with residential properties), ship cargo terminal loading areas, ferry and passenger terminals, barge loading facilities, ship building and dry docking, marinas, aquaculture, float plane facilities and sewer outfalls.
- 525
- Water-Enjoyment Use** –A recreational use or other use that facilitates public access to the shoreline as a primary characteristic of the use; or a use that provides for recreational use or aesthetic enjoyment of

530 the shoreline for a substantial number of people as a general characteristic of the use and which
through location, design, and operation ensures the public's ability to enjoy the physical and aesthetic
535 qualities of the shoreline.

Water-Oriented Use –Any combination of water-dependent, water-related, and/or water enjoyment
uses and serves as an all-encompassing definition for priority uses under the SMA. Non-water-oriented
540 serves to describe those uses which have little or no relationship to the shoreline and are not
considered priority uses under the SMA. Examples include professional offices, automobile sales or
repair shops, mini-storage facilities, multifamily residential development, department stores and gas
stations.

Water-Related Use –A use or portion of a use which is not intrinsically dependent on a waterfront
location but whose economic viability is dependent upon a waterfront location because: (a) The use
545 has a functional requirement for a waterfront location such as the arrival or shipment of materials by
water or the need for large quantities of water; or (b) The use provides a necessary service supportive
of the water-dependent uses and the proximity of the use to its customers makes its services less
expensive and/or more convenient.

Weir – A structure in a stream or river for measuring or regulating stream flow.

545 **Wetlands or Wetland Areas** – See SMC 18.13.010 – Definitions.

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Appendix A – Shoreline Environment Designation Map

A.1 Introduction

The “Stevenson Shoreline Environment Designation Map” contained is contained in SMP Section A.4, below and indicates the shoreline jurisdiction as it exists when this SMP is adopted. The City has elected to predesignate areas within the Stevenson Urban Area, and the shoreline environment designations (SEDs) of those area will take effect immediately upon annexation.

A.2 Parallel Environments & Specific Interpretations

To address different conditions between the area immediately adjacent to the OHWM and upland areas closer to the shoreline jurisdiction boundary, this SMP selectively applies two or more SEDs to single stretches of shoreline. These Parallel Environments and other specific boundaries are described below.

A.2.1 Ashes Lake

1. Road Rights-of-Way – For all road rights-of-way (Ash Lake, Mallicott, SR-14, BNSF) within this reach, the Urban Conservancy SED applies. The Natural SED applies to all other shorelands in this reach.

~~None at this time.~~

A.2.2 Columbia River

1. BNSF Railroad, West Urban Area – For road rights-of-way (SR-14, BNSF) west of the centerline of Rock Creek, the Urban Conservancy SED applies. Where the Shoreline Residential designation applies it applies to lands southeast of that line.

~~1.2. BNSF Railroad, Downtown Area – For areas east of the centerline of Rock Creek, the Active Waterfront Urban SED applies to all lands northwest of the railroad’s southeastern right-of-way line. Where the Shoreline Residential designation applies it applies to lands southeast of that line.~~

~~2.3. BNSF Railroad, East Urban Area, A – For all areas west-east of the centerline of Kanaka Vallett Creek, the Urban Conservancy SED applies, except as designated in 4, 5 and 6, below. ~~to all lands upland of the railroad’s northwestern right-of-way line. The Natural designation applies to all such lands waterward of that line.~~~~

4. Peninsulas – For all peninsulas/outcroppings into the Columbia River from road rights-of-way, the Natural SED applies. This includes the peninsula formed along the Columbia River and the east bank of Kanaka Creek.

~~3.5. BNSF Railroad, East Urban Area, B – For areas east of the centerline of Vallett Creek, the Shoreline Residential SED applies to all lands upland of the railroad’s northwestern right-of-way line. The Natural designation applies to all such lands waterward of that line. Private Parcel #03-75-36-3-0-0400, et. al.—For the private property(ies) located upland from the SR-14 road right-of-way in the East Urban Area, the Shoreline Residential SED applies.~~

4.6. Private Parcel #03-75-36-~~34~~-0-1803000, et. al. – Beginning with parcel 03-75-36-~~34~~-0-1803000 and continuing eastward, all private, non right-of-way properties shoreland areas along the Columbia River are predesignated as Shoreline Residential.

A.2.3 Rock Cove

1. Parcel #02-07-01-0-0-1300, 1303, 1304 – For these 3 parcels, the Active Waterfront SED applies. For shorelands outside of these 3 parcel boundaries and as designated in 2, below, the Urban Conservancy SED applies.
 2. Peninsulas – For all peninsulas/outcroppings into Rock Cove from the SR-14 right-of-way, the Natural SED applies.
- None at this time.

A.2.4 Rock Creek

1. Ryan Allen & BPA Rights-of-Way – For all areas within the rights-of-way for Ryan Allen Road and the BPA powerline, the Urban Conservancy SED applies.
- ~~1. Angel Heights Conservation Easement – The Natural SED applies to all areas within the conservation easement depicted on the plat of Angel Heights Subdivision Phase 1, recorded at AFN 2005158873 and described in the easement recorded at AFN 2005158874. The Shoreline Residential designation applies to all areas landward of the area encumbered by that easement.~~
2. Williams Northwest Pipeline – For parcels #03-07-35-1-4-0100 (County Transfer Site), #03-07-36-2-3-0100, and #03-07-36-2-3-0101, the Natural SED applies to all areas waterward of the south or waterward edge of the easement and/or right-of-way controlled by the utility for operation of the gas transmission pipeline. The Urban designation applies landward of that line.
3. Iman Cemetery – For Tax Parcel #03-07-36-2-3-0300 owned by the Skmania County Cemetery District, the Urban Conservancy SED applies.
- ~~2.4. Skmania County Parcel #03-07-36-2-3-0104 – The Natural SED applies to this entire strip of land along Rock Creek. The Shoreline Residential designation applies to the properties landward of this publicly-owned parcel.~~
5. Angel Heights Conservation Easement – The Natural SED applies to all areas within the conservation easement depicted on the plat of Angel Heights Subdivision-Phase 1, recorded at AFN 2005158873 and described in the easement recorded at AFN 2005158874. The Shoreline Residential designation applies to all areas landward of the area encumbered by that easement.
- ~~3.1. Williams Northwest Pipeline – For parcels #03-07-35-1-4-0100 (County Transfer Site), #03-07-36-2-3-0100, and #03-07-36-2-3-0101, the Natural SED applies to all areas waterward of the south or waterward edge of the easement and/or right-of-way controlled by the utility for operation of the gas transmission pipeline. The Urban designation applies landward of that line.~~

A.3 Parcel Guide

This SMP relies on the shoreline jurisdiction map and site-specific investigation to determine the location of shoreline jurisdiction and shoreline environment designations. The table below is intended as a tool to assist site-specific investigation; however, the usefulness of this tool will decline over time as 1) legal actions related annexation, land division, consolidation, segregation, etc. change the boundaries of parcels and 2) natural actions change the location of the Ordinary High Water Mark (OHWM). Therefore, the listings below should not be considered definitive and are secondary to the maps and remaining text of this SMP.

URBAN	
Parcels in 2018 Stevenson’s Shoreline Jurisdiction	Pre-Designation Parcels

SHORELINE RESIDENTIAL	
NATURAL	
AQUATIC	

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A.4 Stevenson Shoreline Environment Designation Map

80 The Shoreline Environment Designation Map appears on the following 11x17" page.

A.5 Boundary Interpretation

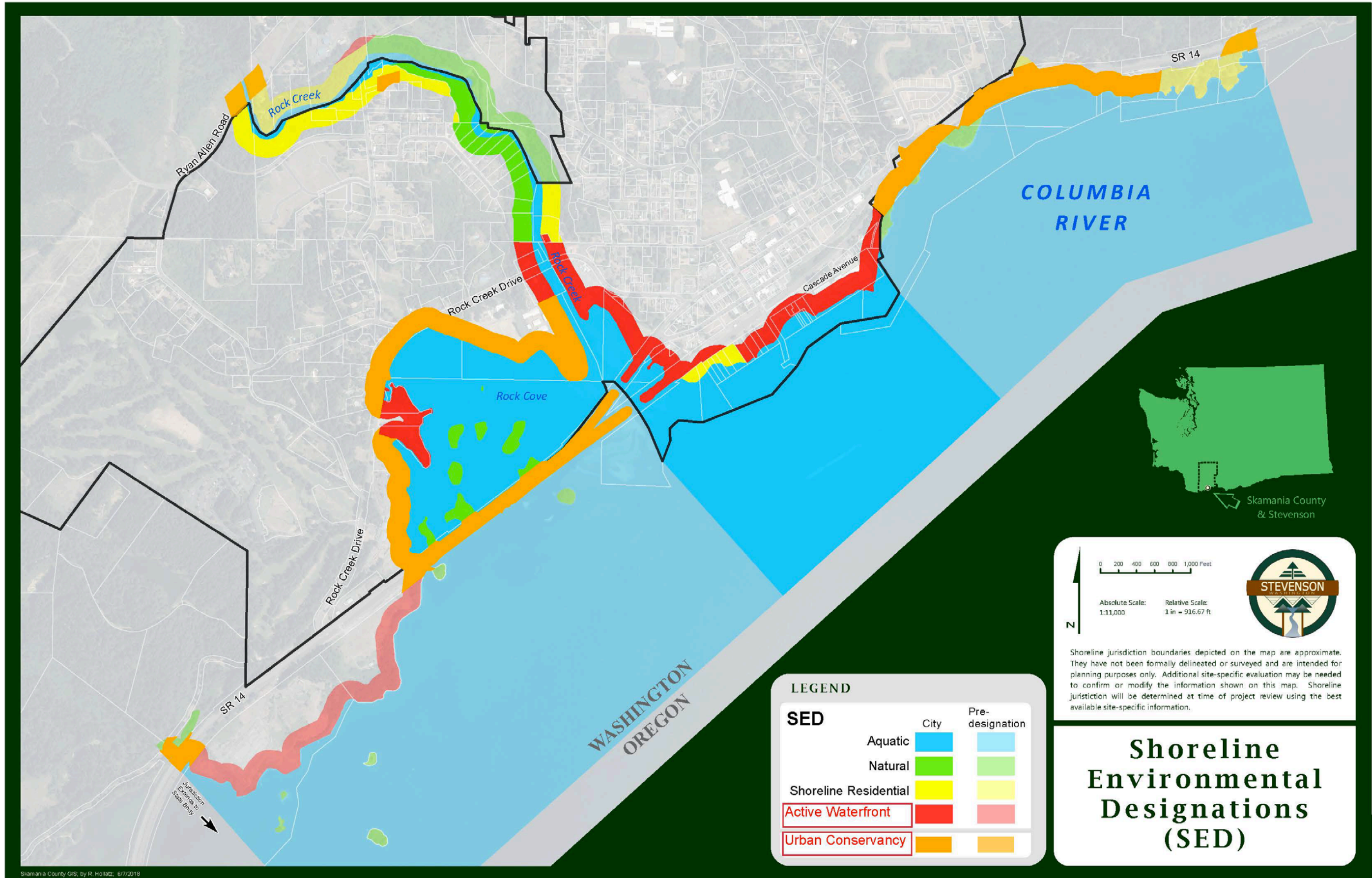
1. If disagreement develops as to the exact location of the boundary line of a Shoreline Environment Designation (SED) that is shown on the map in Appendix A, the following rules shall apply:
 - 85 a. Boundaries indicated as approximately following lot, tract, or section lines shall be so construed.
 - b. Boundaries indicated as approximately following streets, alleys, or railways shall be respectively construed to follow the right-of-way centerlines.
 - 90 c. Boundaries indicated as approximately parallel to or extensions of features indicated in a) or b) above shall be so construed.
2. Whenever existing physical features (including stream centerlines) are inconsistent with the boundaries on the Shoreline Environment Designation Map, the Shoreline Administrator shall interpret the boundaries with deference to actual conditions.
3. In the event of a mapping error, the City will rely upon common boundary descriptions and the criteria contained in RCW 90.58.030(2) and chapter 173-22 WAC pertaining to determinations of shorelands, as amended, rather than the incorrect or outdated map.
- 95 4. Where a SED boundary line divides a lot in single ownership at the effective date of this SMP and any amendment thereto, the use permitted on the least restrictive portion of such lot may extend to the portion lying in the more restrictive SED a distance of not more than 50 feet beyond the district boundary line.
- 100 5. If disagreement remains after applying the preceding rules, the City shall interpret the boundary during review of the underlying application.
- 105 6. If an area is found to be within shoreline jurisdiction that is not mapped and/or designated in this SMP, the City shall apply the "Urban Conservancy" designation as it is written in WAC 173-26-211(5)(e) until re-designated through a master program amendment process.

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0 200 400 600 800 1,000 Feet

Absolute Scale: 1:11,000 Relative Scale: 1 in = 916.67 ft

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Shoreline jurisdiction boundaries depicted on the map are approximate. They have not been formally delineated or surveyed and are intended for planning purposes only. Additional site-specific evaluation may be needed to confirm or modify the information shown on this map. Shoreline jurisdiction will be determined at time of project review using the best available site-specific information.

LEGEND

SED	City	Pre-designation
Aquatic		
Natural		
Shoreline Residential		
Active Waterfront		
Urban Conservancy		

Shoreline Environmental Designations (SED)

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SHORELINE MASTER PROGRAM



City of Stevenson
SEPA Review Draft Shoreline Restoration Plan

November 2018

Ecology Grant # G1200-044

Tasks 4.1



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Chapter 1 – Introduction

1.1 Title

This document shall be known and may be cited as the 2018 Stevenson Shoreline Restoration Plan (Restoration Plan or RP).

1.2 Adoption Authority & Plan Context

This restoration plan was prepared as part of the City of Stevenson (City) Comprehensive Shoreline Master Program (SMP) update. The City's SMP was first adopted in June 1974 and was revised in August 1975. The current program does not include a restoration plan element as is now required in order to comply with the Washington State Shoreline Management Act (SMA), Revised Code of Washington (RCW) 90.58, and the SMP Guidelines, Washington Administrative Code (WAC) 173.26.

Included within the updated SMP are the policies and regulations that govern the use and development of the City's shorelines. Some projects require compensatory mitigation to offset unavoidable impacts, however research has shown that even the best designed and implemented mitigation projects are subject to some degree of failure. Further, it has been shown that existing legally allowed and previously permitted shoreline use and development, as well as exempt and unregulated shoreline activities often have incremental, unmitigated impacts that result in degraded shoreline conditions. Therefore, the SMP is required to include a "real and meaningful" strategy to restore impaired shoreline ecological functions. This restoration plan is the City's strategy.

This strategy is adopted under the authority granted by the Shoreline Management Act of 1971 embodied in the RCW Chapter 90.58, and is adopted in compliance with the Shoreline Master Program Guidelines contained in WAC 173-26.

This Restoration Plan is not proposed for inclusion as regulatory text or as part of the Stevenson Comprehensive Plan or the Stevenson Municipal Code. However, the City's SMP indicates that degraded areas should be restored in accordance with this restoration plan, and the content of this plan will serve as a useful reference during SMP implementation.

1.3 Purpose & Goal

Generally speaking, shoreline and waterbody restoration is defined as returning an area to a previous condition by improving its current ecological conditions. The SMA defines restoration as follows:

"Restore", "Restoration", or "Ecological Restoration" means the reestablishment or upgrading of impaired ecological shoreline processes or functions. This may be accomplished through measures including, but not limited to, revegetation, removal of intrusive shoreline structures and removal or treatment of toxic materials. Restoration does not imply a requirement for returning the shoreline area to aboriginal or pre-European settlement conditions. (WAC 173-26-020)

1.3.1 Plan Purpose

The purpose of this plan is to identify restorative actions to address impaired ecological processes and functions. Although many of the opportunities for restoration activities described in this plan affect

private property, it is not the intention of the City to require or commit private property owners to carrying out those restoration activities. Instead, this is a facilitative plan of the City which will support restoration actions whenever willing collaborations with or between landowners exist. Additionally, private landowners who are required to provide mitigation for development-related impacts may choose to implement the actions noted in this plan as a way of meeting those mitigation obligations.

1.3.2 Restoration Goal

In accordance with the SMP guidelines (WAC 173-26-201(2)(f)), the City has established the following as the goal of this restoration plan:

Voluntary actions and public/private partnerships successfully restore, reestablish, or otherwise improve shoreline ecological functions. As a result, ecosystem-wide processes are more predictable than in 2018, and Stevenson's shorelines are more capable than ever before of sustaining human investments.

The action plan to achieve this goal is detailed in Chapter 3.

1.3.3 Relationship to Inventory & Characterization Report

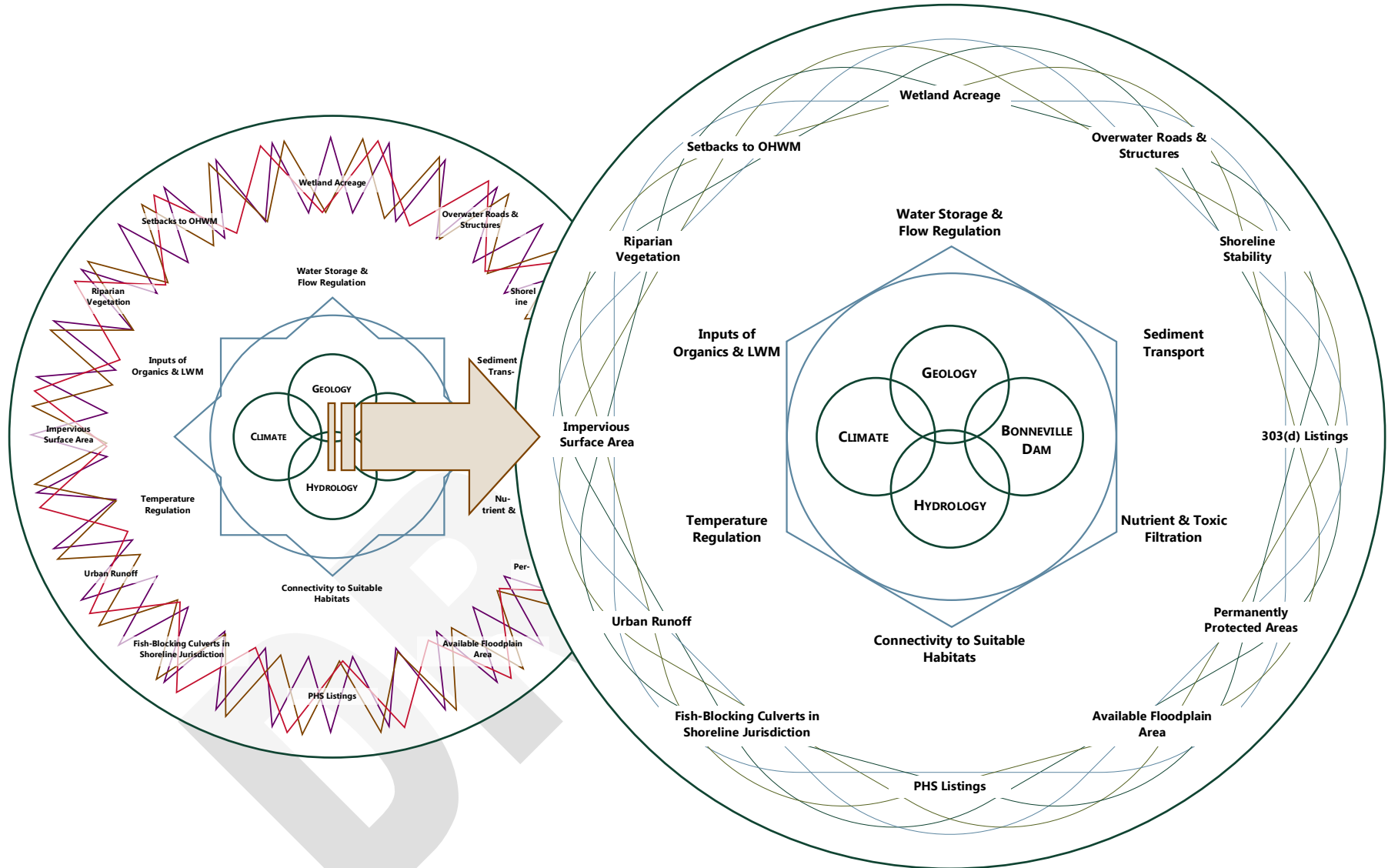
The actions of this plan will rely on the existing condition information provided in the City's Shoreline Inventory & Characterization Report (ICR), which evaluated ecosystem-wide processes, shoreline ecological functions, and the land uses within shoreline jurisdiction. Figure 1-1, below shows how implementation of this Restoration Plan can smooth out uncertainties and fluctuations in the ecological functions of Stevenson's shorelines to increase predictability for uses and developments in those areas. This figure is based on a similar figure from the ICR which more fully describes the 4 ecosystem-wide processes, 6 ecological functions, and 12 reach-scale indicators displayed. ICR Chapter 4 includes descriptions of each indicator, a qualitative assessment of their performance, and identifies degraded areas and aspects of the reach which could be restored and/or enhanced.

1.4 Methodology

SMPs must include goals, policies, and actions to restore impaired shoreline ecological functions. These provisions are to achieve overall improvements in shoreline ecological functions over time, when compared to the functions' status upon adoption of the SMP. The approach to restoration planning may vary significantly among local jurisdictions, depending on the size of the jurisdiction; the extent and condition of the shorelines in the jurisdiction; the availability of grants, volunteer programs, or other tools for restoration; and the nature of the ecological functions to be addressed by restoration planning. The guidelines (WAC 173-26-201(2)(f)) require that shoreline restoration plans address the following six components.

- Identify degraded areas, impaired ecological functions, and sites with potential for ecological restoration.
- Establish overall goals and priorities for the restoration of degraded areas and impaired ecological functions.
- Identify existing and ongoing projects and programs that are being implemented, or are reasonably assured of being implemented (based on an evaluation of funding likely in the foreseeable future), and which are designed to contribute to local restoration goals.

FIGURE 1-1 RESTORATION PLAN GOAL: IMPROVE ECOLOGICAL FUNCTIONS



Added Predictability of Ecological Functions through Restoration Plan Implementation

Implementation of the Shoreline Restoration Plan will reduce fluctuation in shoreline ecological functions and ecosystem-wide processes. The resulting predictability will better sustain human investments in shoreline areas.

Figure Credit: Ben Shumaker (2018).

- Identify additional projects and programs needed to achieve local restoration goals and implementation strategies, including prospective funding sources for the projects and programs.
- Identify timelines and benchmarks for 1) implementing restoration projects and programs and 2) achieving local restoration goals.
- Provide mechanisms or strategies that will ensure 1) the implementation of restoration projects and programs according to plans, and 2) the appropriate review of their effectiveness in meeting the overall restoration goals.

1.4.1 Study Area

The study area for this analysis includes all shoreline areas currently within city limits and the presdesignated shorelines outside of city limits but within the Stevenson Urban Area as defined under the *Columbia River Gorge National Scenic Area Act*. The study area is located in Skamania County, Washington, on the north bank of the Columbia River and contains shorelines associated with Columbia River (a shoreline of statewide significance), Ashes Lake, Rock Cove, and Rock Creek. The City encompasses approximately 1.52 square miles in Water Resource Inventory Area (WRIA) 29 – Wind-White Salmon – and is surrounded by rural residential and forest lands to the east, west and north. The WRIA subbasins where Stevenson’s shoreline is located include Rock Creek and several Columbia River Tributaries. The total land area subject to the proposed SMP is ~185 acres, with only ~100 acres currently within the City’s Shoreline Jurisdiction. The study area of this restoration plan evaluates ~10 miles of shoreline length, with ~6.3 miles of shoreline currently within city jurisdiction.

1.4.2 No Net-Loss & Restoration

Per the SMP Guidelines, “no net loss” means that impacts may occur, but adequate measures are in place within the overall shoreline program to mitigate them such that the post-development conditions are no worse overall than pre-development conditions.

The restoration plan component of the SMP is an acknowledgement that mitigation alone is not enough to prevent loss of ecological functions during land use and development, and that a restoration plan is needed to offset the expected loss of function that will occur from site-specific mitigation and other incremental impacts sustained over time.

The guidelines note that “no net loss” is achieved primarily through regulatory mechanisms, including mitigation requirements, but that restoration incentives and voluntary actions are also critical to achieving no net loss. The SMP requires that shoreline development fully mitigate impacts caused by the proposed project. Although developers are not required to improve conditions over and above the impacts of their development action, they may elect to implement elements of this plan as mitigation for shoreline development if appropriate. Two examples: 1) a park improvement project could be designed to include the removal of invasive species and streambank stabilization. These actions would have the effect of improving conditions over time, which is necessary for achieving no net loss, and 2) new nonwater oriented commercial or industrial mixed-use projects seeking to locate in a Shoreline Environment Designation where they are not preferred must provide a significant public benefit, such as public access or ecological restoration. These proposals can include projects from RP Figure 3-1.

Citizens, agencies, and other groups may also elect to implement this plan’s projects purely for the ecological benefits of restoration—irrespective of development activity or mitigation requirements.

Chapter 2 – Existing Conditions

This section includes selected text from the ICR as an overview of the shoreline waterbodies in Stevenson’s shoreline jurisdiction. The following includes a short description and examples of degraded areas and restoration opportunities from each reach. A more complete background is provided in the ICR.

2.1 Summary of Degraded Areas and Restoration Opportunities

RP Figure 2-1: Restoration Opportunities identifies 13 distinct opportunities to restore the ecological functions of Stevenson’s shorelines. These opportunities are based in part on best practices from other communities and in part on the ICR’s list of 73 degraded areas and restoration opportunities within the City’s 7 reaches. Where this figure identifies specific restoration projects, those projects are more fully described by RP Figure 3-1: Restoration Action Plan.

FIGURE 2-1: RESTORATION OPPORTUNITIES

Opportunity	Restoration Need	Potential Restoration Projects
Bonneville Impoundment & Inundation of Floodplains	<ul style="list-style-type: none"> Decrease channel width-to-depth ratios. Dredge shoreline waterbodies as appropriate, including confluence of Rock Creek and Columbia River. Replace riprap by regrading, use of bio-engineering, implementing measures that improve channel width-to-depth ratios, and removing where not needed. 	<ul style="list-style-type: none"> R.1 – Rock Creek Dredge 2009 R.2 – Rock Creek Drive Bridge Replacement Project
Aggradation in Lower Rock Creek	<ul style="list-style-type: none"> Develop a plan to address input and throughput of sediment entering lower Rock Creek and Rock Cove since the Piper Road Landslide. Decrease channel width-to-depth ratios. Dredge shoreline waterbodies as appropriate, including confluence of Rock Creek and Columbia River. 	<ul style="list-style-type: none"> R.3 – Stevenson Shoreline Restoration & Enhancement Project R.1 – Rock Creek Dredge 2009 R.4 – Rock Cove Rehabilitation Project
Character & Coverage of Riparian Vegetation	<ul style="list-style-type: none"> Increase canopy cover in shoreline areas. Plant trees along shorelines, especially shade-providing trees on the south and west banks of shoreline waterbodies. Plant Oregon White Oak and other species that overhang shoreline waterbodies and provide allochthonous inputs to the aquatic ecosystem. Plant native vegetation to replace existing non-native vegetation and lawns in shoreline areas because of their need for more water, which can contribute to erosion, and fertilizers, which can negatively affect water quality. 	<ul style="list-style-type: none"> R.3 – Stevenson Shoreline Restoration & Enhancement Project R.1 – Rock Creek Dredge 2009
Invasive Aquatic & Riparian Vegetation	<ul style="list-style-type: none"> Partner with and encourage participation in the Skamania County Noxious Weed Control Program Develop projects to eradicate invasive species from shoreline habitats. Identify and remove invasive aquatic species, especially milfoil in Rock Cove and the Columbia River. Identify and remove invasive species, including Himalayan blackberry, reed canary grass, and English Ivy. Replant native trees and shrubs to discourage recolonization of invasives, control erosion, and preserve water quality. 	<ul style="list-style-type: none"> R.4 – Rock Cove Rehabilitation Project R.5 –Milfoil Removal Projects

FIGURE 2-1: RESTORATION OPPORTUNITIES, CONT.

Opportunity	Restoration Need	Potential Restoration Projects
Riprap Armoring of Shorelines	<ul style="list-style-type: none"> • Soften riprap armoring through planting of vegetation. • Replace riprap by regrading, use of bio-engineering, implementing measures that improve channel width-to-depth ratios, and removing where not needed. 	<ul style="list-style-type: none"> • R.3 – Stevenson Shoreline Restoration & Enhancement Project
Fish-Blocking Culverts	<ul style="list-style-type: none"> • Replace culverts to improve fish passage. • Increase habitat diversity. • Identify whether culverts under the railroad and SR 14 eliminate fish passage. 	<ul style="list-style-type: none"> • R.4 – Rock Cove Rehabilitation Project • R.6 – Rock Creek Drive Foster Creek Culvert Replacement • R.7 – SR 14 Kanaka Creek Culvert Replacement
Abandoned, Non-Water-Oriented or Otherwise Inappropriate Shoreline Structures & Development	<ul style="list-style-type: none"> • Replace Rock Creek Drive Bridge with freespan structure. • Remove existing Rock Creek Drive Bridge piers and in stream “tree-catcher structures upstream of bridge. • Remove City-owned house at Vancouver Avenue and Rock Creek. • Remove derelict pilings in Rock Cove and the Columbia River. • Remove sheet pile at Leavens Point. • Remove the abandoned tugboat dock, pilings, and utility building between SR 14 and the BNSF railroad. • Remove abandoned fence, metal strapping, debris, and concrete structures near the County’s Hegewald Mill Site on Rock Cove. • Encourage WSDOT to evaluate replacement of the SR 14 bridge over Rock Creek. • Develop programs to identify and upgrade or remove shoreline structures that are degrading local habitats. 	<ul style="list-style-type: none"> • R.2 – Rock Creek Drive Bridge Replacement Project • R.3 – Stevenson Shoreline Restoration & Enhancement Project • R.4 – Rock Cove Rehabilitation Project • R.8 – Vancouver Avenue House Removal • R.9 – Old Hegewald Mill Site Redevelopment Project • R.10 – Willing Partner Database Project
Public Awareness of Restoration Needs	<ul style="list-style-type: none"> • Educate homeowners on low-impact development practices, including stormwater control, for shoreline properties. • Educate property owners on the benefits of trees and native vegetation in shoreline areas. • Educate land owners on the impacts of lawn chemicals/fertilizers. • Educate property owners on the impacts of flowage easements maintained by the USACE. • Encourage participation in the Skamania County Master Gardeners training offered by Oregon State University-Hood River and Washington State University-Vancouver. • Educate boaters on best boating practices to minimize habitat disruption/damage and water contamination. • Encourage participation by utility providers in the optional memorandum of understanding (MOU) process for utility maintenance exemptions. 	<ul style="list-style-type: none"> • R.11 – CAO Utility Maintenance Exemption Program • R.10 – Willing Partner Database Project
Data Gaps	<ul style="list-style-type: none"> • Address gaps that hinder identification of site-specific restoration needs and opportunities. • Identify and assess the quality of priority habitats and the primary constituent elements of critical habitat for species protected by state and federal law. • Delineate and rate wetlands in shoreline jurisdiction in advance of development proposals. • Encourage a statewide or regionwide clearinghouse to curate wetland reports and datasheets. • Ensure restoration project data and information are fully integrated and tracked in LCFRB’s SalmonPORT database. • Identify and evaluate hyporheic zones in shoreline jurisdiction. • Identify sources of pollutants (e.g., stormwater runoff) and develop restoration projects to address these sources. 	<ul style="list-style-type: none"> • R.12 – State Wetland Clearinghouse •

FIGURE 2-1: RESTORATION OPPORTUNITIES, CONT.

Opportunity	Restoration Need	Potential Restoration Projects
Active Shoreline Erosion along Port Holdings	<ul style="list-style-type: none"> • Arrest erosion. • Stabilize land to prevent loss of shoreline development/entry of pollutants. • Vegetate with native species appropriate to the multi-use urban waterfront. 	<ul style="list-style-type: none"> • R.3 – Stevenson Shoreline Restoration & Enhancement Project • R.1 – Rock Creek Dredge 2009
Ecosystem-Wide Water Quality Concerns	<ul style="list-style-type: none"> • Develop public stormwater treatment infrastructure to treat water drained from the residential core of the city. • Promote the replacement of paved parking areas within shoreline jurisdiction with pervious pavement or addition of stormwater treatment landscaping at a ratio similar to SMC 17.35.130(B)(4) through incentives such as grants or development fee reductions. • Promote retrofitting existing shoreline development with landscaping, rain gardens, and other stormwater improvement measures. 	<ul style="list-style-type: none"> • R.13 – Vancouver Avenue Stormwater Outfall Replacement Project • R.14 – Incentive-Based Planning Fee Schedule
Water Quantity & Quality related to Landslides along Rock Creek	<ul style="list-style-type: none"> • Reduce stormwater runoff, especially in sensitive areas (steep, erodible slopes). • Reduce sediment accumulation. • Improve channel stability and stability of the Piper Road Landslide within the shoreline area. • Restore natural rates of erosion and mass wasting within river corridors. • Replant heavily cut forested areas. • Replant/enhance riparian vegetation to improve sediment sorting and channel stability. • Place LWM to enhance cover, pool formation, bank stability, and sediment sorting. 	<ul style="list-style-type: none"> • R.1 – Rock Creek Dredge 2009
Habitat Quality for Salmonid Species in Rock Creek	<ul style="list-style-type: none"> • Improve fish passage. • Reduce sediment accumulation. • Increase habitat diversity. • Improve stream flow. • Ameliorate high water temperatures. • Improve channel stability. • Reduce effective stormwater runoff. • Place LWM to enhance cover, pool formation, bank stability, and sediment sorting. • Decrease channel width-to-depth ratios. • Enhance coniferous riparian vegetation to improve sediment sorting and channel stability. 	<ul style="list-style-type: none"> • R.1 – Rock Creek Dredge 2009 • R.13 – Vancouver Avenue Stormwater Outfall Replacement Project

2.2 Assessment of Individual Reaches

2.2.1 Columbia River Reach 1 – East Urban Area

15 The physical shoreline of Columbia River Reach 1 is located entirely within Skamania County and east of the City’s downtown waterfront. However, some small areas of shorelands and 2 associated wetlands from this reach extend into inside city limits. The shorelands occur along the Kanaka Creek Underpass road, and the wetlands are located on the north side of SR 14, affecting 3 properties having

20 commercial, stormwater utility, and residential uses. Beyond these areas, the City has elected to predesignate the shorelines of this reach that are located outside existing City boundaries. In total, this comprises~5,555 linear feet of Columbia River shoreline and 256 acres of shoreline jurisdiction area,

26.1 acres of which are shorelands above the OHWM. The reach starts at the eastern urban growth boundary line at Nelson Creek and ends downstream at the eastern city limits and Kanaka Creek. This reach is a shoreline of statewide significance.

25

FIGURE 2-2 EAST URBAN AREA DEGRADATION & RESTORATION OPPORTUNITIES



Columbia River Reach 1 Degradation & Restoration Opportunities
Differing culvert sizes & elevations, Riprap slopes, and Invasive species along the SR 14/BNSF railroad berm
Photo Credits: Ben Shumaker (2013).

The degraded areas and restoration opportunities identified in this reach include:

30

1. Bonneville impoundment of the Columbia River and inundation of floodplains.
2. Character and coverage of riparian vegetation.
3. Rip rap armoring of shorelines (BNSF/SR 14 berm).
4. Culverts (railroad/highway berm and Lutheran Church Road).
5. Unknown character of PHS listings.
6. Unknown character and functions of wetlands.
7. Ecosystem-wide water quality concerns.
8. Proximity of non-water-oriented and/or abandoned structures to OHWM.
9. Quantity & unknown quality of stormwater runoff.

35

2.2.2 Columbia River Reach 2 – Downtown Waterfront

Columbia River Reach 2 is located in the city and includes the downtown waterfront and ~4,175 linear feet of Columbia River shoreline. The reach starts at the eastern limits of the city at Kanaka Creek, and ends downstream at its western limits on the Columbia River, at the center of the BNSF railroad bridge over Rock Creek. There are 222 acres of total land and water area in this reach and 35 acres of land above the OHWM.

40

FIGURE 2-3 DOWNTOWN WATERFRONT DEGRADATION & RESTORATION OPPORTUNITIES



Columbia River Reach 2 Degradation & Restoration Opportunities
Sheetpile, active erosion, and staging along the Port of Skamania's Stevenson Shoreline Restoration & Enhancement Project
Photo Credits: John McSherry (2010, 2012), Ben Shumaker (2015, 2018).

45

The degraded areas and restoration opportunities identified in this reach include:

1. Bonneville impoundment of the Columbia River and inundation of floodplains.
2. Aggradation in lower Rock Creek.
3. Character and coverage of riparian vegetation.
4. Rip rap armoring of shorelines.
5. Active shoreline erosion along Port holdings.
6. Culverts (Kanaka Creek).
7. Unknown character of PHS listings.
8. Unknown character and functions of wetland.
9. Ecosystem-wide water quality concerns.
10. Paved coverage (Cascade Avenue, Kanaka Creek Underpass, and parking areas).
11. Proximity of non-water-oriented and/or abandoned structures to OHWM.
12. Sheet pile at Leavens Point.
13. Abandoned pilings.
14. Quantity & unknown quality of stormwater runoff.

2.2.3 Columbia River Reach 3 – West Urban Area

Columbia River Reach 3 is located south of Rock Cove and west of the downtown waterfront. It includes ~8,000 linear feet of the Columbia River shoreline, and 396 acres of predesignated shoreline area. Only 34 acres of this reach are shorelands located above the OHWM. The reach is located outside the city limits and begins at the western boundary of Columbia River Reach 2 at the centerline of Rock Creek and ends downstream at the eastern boundary of Ashes Lake. The reach includes the full right-of-way for SR 14, the BNSF railroad, and privately owned properties. This reach is a shoreline of statewide significance.

FIGURE 2-4 WEST URBAN AREA DEGRADATION & RESTORATION OPPORTUNITIES



Columbia River Reach 3 Degradation & Restoration Opportunities

Derelict piles, riprap slopes & invasive species on the SR 14/BNSF rail road berm. Former industrial development.

Photo Credits: Ben Shumaker (2013) Washington Department of Ecology (2007).

The degraded areas and restoration opportunities identified in this reach include:

1. Bonneville impoundment of the Columbia River and inundation of floodplains.
2. Aggradation in lower Rock Creek.
3. Character and coverage of riparian vegetation.
4. Rip rap armoring of shorelines.
5. Unknown character of PHS listings.
6. Ecosystem-wide water quality concerns.

7. Paved coverage (roads and former industrial site).
8. Proximity of non-water-oriented and/or abandoned structures to OHWM.
9. Abandoned pilings.
10. Quantity & unknown quality of stormwater runoff.

2.2.4 Rock Creek Reach 1

Rock Creek Reach 1 includes the shoreline jurisdictional area associated with Rock Creek within the City's boundaries. On the east side of this stream, this reach covers the area within city limits from the approximate extension of Lasher Street downstream to the BNSF railroad trestle. This reach also runs along the west/south side of the stream from Ryan Allen Road at the upstream end to the BNSF railroad trestle at the downstream end. The southwestern boundary of this reach at the Rock Cove reach is hard to pinpoint, running southward over the Creek's deltaic deposits toward the trestle. This reach includes ~10,375 linear feet of shoreline, 44 acres of shorelands, and 4 acres of water within shoreline jurisdiction. This reach is not a shoreline of statewide significance.

FIGURE 2-5 ROCK CREEK REACH 1 DEGRADATION & RESTORATION OPPORTUNITIES



Figure 4.4-3 Potential Restoration Opportunities, Rock Creek Reach 1

Untreated stormwater outfall & abandoned residence. Rock Creek Drive bridge & protective pilings. Abandoned tug boat dock.

Photo Credits: Ben Shumaker (2013, 2018)

The degraded areas and restoration opportunities identified in this reach include:

1. Bonneville impoundment of the Columbia River and inundation of floodplains.
2. Aggradation in lower Rock Creek.
3. Shoreline instability near the Piper Road Landslide.
4. Character and coverage of riparian vegetation (lower Rock Creek).
5. Rip rap armoring of shorelines.
6. Presence of piers in Rock Creek for the SR 14 and Rock Creek Drive bridges.
7. Unknown character of PHS listings.
8. Ecosystem-wide water quality concerns.
9. Paved coverage (roads and parking areas).
10. Proximity of non-water-oriented and/or abandoned structures to OHWM (abandoned residential and former transportation structures).
11. Abandoned pilings.
12. Quantity & unknown quality of stormwater runoff.
13. Quality of stormwater entering from Vancouver Avenue stormwater outfall.

2.2.5 Rock Creek Reach 2

Rock Creek Reach 2 includes shoreline jurisdictional area associated with the north/east bank of Rock Creek in the unincorporated Urban Area. This includes the area ~5,325 linear feet from the City

boundary at about Lasher Street upstream to the urban area boundary just north of Ryan Allen Road. The reach includes 30 acres of land and 7 acres of water. The City is choosing to pre-designate this reach in preparation for future annexation. This reach is not a shoreline of statewide significance.

FIGURE 2-6 ROCK CREEK REACH 2 DEGRADATION & RESTORATION OPPORTUNITIES



Rock Creek Reach 2 Degradation & Restoration Opportunities

Scarp of Piper Road Landslide at Rock Creek's First Falls & resulting aggradation in Lower Rock Creek.

Photo Credits: Washington Department of Transportation (2007), Washington Department of Ecology (2007)

115

The degraded areas and restoration opportunities identified in this reach include:

1. Bonneville impoundment of the Columbia River and inundation of floodplains.
2. Aggradation in lower Rock Creek.
3. Shoreline instability near the Piper Road Landslide.
4. Character and coverage of riparian vegetation (Piper Road Landslide).
5. Unknown character of PHS listings.
6. Proximity of non-water-oriented and/or abandoned structures to OHWM.
7. Quantity & unknown quality of stormwater runoff.

120

2.2.6 Rock Cove

The Rock Cove reach includes the waterbody otherwise known as the Stevenson Mill Pond, Stevenson Lake, Rock Creek Pond, or Hegewald Mill Pond. Rock Cove is located in the city, is connected to Rock Creek Reach 1 at its mouth, and is to the north of Columbia River Reach 3, separated by the highway/railroad berm. The reach includes all of Rock Cove, the northern fill slope of SR 14, and western portions of the Skamania County Fairgrounds, the Columbia Gorge Interpretive Center, other County-owned properties, and three residential properties. Including the islands in the cove, there are ~18,800 linear feet of shoreline, 69 acres of water, and 35 acres of shorelands.

125

130

FIGURE 2-7 ROCK COVE DEGRADATION & RESTORATION OPPORTUNITIES



Rock Cove Degradation & Restoration Opportunities

Pilings, fences, & dredge basins provide visible relics of Rock Cove's industrial past.

Photo Credits: BergerABAM (2015), Ben Shumaker (2013), Washington Department of Ecology (2007)

The degraded areas and restoration opportunities identified in this reach include:

- 135
1. Bonneville impoundment of the Columbia River and inundation of floodplains.
 2. Aggradation in lower Rock Creek.
 3. Character and coverage of riparian vegetation.
 4. Rip rap armoring of shorelines.
 5. Culverts (Foster Creek).
 - 140 6. Unknown character of PHS listings.
 7. Unknown character and functions of wetland.
 8. Ecosystem-wide water quality concerns.
 9. Paved coverage (roads and parking areas).
 10. Proximity of non-water-oriented and/or abandoned structures to OHWM (abandoned former industrial fences, metal strapping and debris, and concrete structures).
 - 145 11. Abandoned pilings.
 12. Quantity & unknown quality of stormwater runoff.

2.2.7 *Ashes Lake*

150 The Ashes Lake reach includes only the extreme eastern portion of Ashes Lake, two road rights-of-way (Ash Lake and Mallicott), and small portions of privately owned properties. This reach is located within the Stevenson Urban Area, west of Skamania Lodge and north of SR 14, and is being predesignated. The Columbia River frontage south of the highway and railroad is part of Columbia River Reach #3, previously described. The shoreline jurisdictional area of this reach includes all lands extending landward for 200 feet from the OHWM, including floodplains within 200 feet. This reach is not a shoreline of statewide significance.

155

The degraded areas and restoration opportunities identified in this reach include:

1. Bonneville impoundment of the Columbia River and inundation of floodplains.
2. Character and coverage of riparian vegetation.
3. Rip rap armoring of shorelines.
- 160 4. Unknown character of PHS listings.
5. Unknown character and functions of wetland.
6. Paved coverage (roads).
7. Proximity of non-water-oriented and/or abandoned structures to OHWM.
8. Quantity & unknown quality of stormwater runoff.

Chapter 3 – Restoration Actions

5 This Chapter identifies specific actions which can be taken to restore the ecological functions of Stevenson’s shorelines. The restoration projects described in RP Figure 3-1 address the issues summarized in RP Figure 2-1 and are recommended as the primary means to reach the goal of this Restoration Plan and ensure “no net loss” of shoreline ecological functions in Stevenson.

3.1 Action Plan Matrix

10 The action plan matrix provided in RP Figure 3-1 attempts to address the primary “what, why, when, who, and how” questions associated with projects. Because these projects are at different stages in their conceptual development, some cells in the matrix are left blank. Such projects require further investigation and analysis in order to assess their costs, benefits, and overall feasibility prior to their implementation.

15 The projects are listed in a more-or-less random order. The voluntary nature of restoration engenders frequent reprioritization of projects as needs change and opportunities arise. Furthermore, because many of the projects were compiled from the studies and reports of outside agencies, those partners (listed in Restoration Plan Chapter 4) should be consulted when restoration projects are actualized. The Lower Columbia Fish Recovery Board (LCFRB) is a particularly noteworthy partner based on the organizational and funding activities they perform.

20 In addition to the restoration actions listed in this document, other potential restoration projects can be found in reports released by partner organizations. For example, the LCFRB identifies restoration opportunities through their SalmonPORT database and in their detailed implementation plans that have already been funded and/or completed.

3.2 Funding the Actions

25 Shoreline restoration in Stevenson depends almost entirely on grant funding, and its availability is unpredictable, varying from year to year. Many of the proposed restoration projects will require outside funding through federal or state grants along with local, private, or non-profit matching funds. Projects may be funded in multiple phases, with different funding sources appropriate for each phase. Where the action plan identifies potential sources of funding, Appendix B can be used as a more complete--but still not exhaustive--discussion of the funding programs.

FIGURE 3-1 RESTORATION ACTION PLAN

R.0 – Unnamed Projects							
Description	There are many restoration needs identified in RP Figure 2-1 which are not associated with a specific project in this table. This placeholder is intended to address this gap. When new restoration projects are conceptualized, they should be given a provisional title/number under this heading. They should be supported by the City, and their benefits should be tracked for monitoring and amendment purposes.			Priority	<input type="checkbox"/> High <input type="checkbox"/> Low	Readiness	<input type="checkbox"/> Shovel-Ready <input type="checkbox"/> Design <input type="checkbox"/> Planning <input type="checkbox"/> Planning
Functions Improved	<input type="checkbox"/> Sediment Transport <input type="checkbox"/> Nutrient & Toxic Filtration <input type="checkbox"/> Temperature Regulation	<input type="checkbox"/> Water Storage & Flow Regulation <input type="checkbox"/> Input of Organics & LWM <input type="checkbox"/> Connectivity to Suitable Habitat	Reaches Affected	<input type="checkbox"/> CR1 <input type="checkbox"/> CR2 <input type="checkbox"/> CR3	<input type="checkbox"/> AL <input type="checkbox"/> RC1 <input type="checkbox"/> RC2 <input type="checkbox"/> RCo	Timeframe	<input type="checkbox"/> Ongoing <input type="checkbox"/> Complete by 2021 <input type="checkbox"/> Complete by 2029
Cost	<input type="checkbox"/> High (>\$500k) <input type="checkbox"/> Mid (\$50-\$500k) <input type="checkbox"/> Low (<\$50k)	Funding Source	Unknown	Responsibility	Any	Coordinating Parties	Unknown
Status	<input type="checkbox"/> Complete <input type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action	Risks/Issues/ Additional Information	Lack of specific references in this plan may fail to 1) inspire projects that address restoration needs or 2) qualify the project for some grant sources. The Rock Cove Environmental Assessment & Comprehensive Plan (1997) could address those failures for that waterbody.				
R.1 – Rock Creek Dredge 2009							
Description	This project addresses the sediment management needs of Lower Rock Creek since the Piper Road Landslide.			Priority	<input checked="" type="checkbox"/> High <input type="checkbox"/> Low	Readiness	<input checked="" type="checkbox"/> Shovel-Ready <input type="checkbox"/> Design <input type="checkbox"/> Planning <input type="checkbox"/> Conceptual
Functions Improved	<input checked="" type="checkbox"/> Sediment Transport <input checked="" type="checkbox"/> Nutrient & Toxic Filtration <input type="checkbox"/> Temperature Regulation	<input checked="" type="checkbox"/> Water Storage & Flow Regulation <input checked="" type="checkbox"/> Input of Organics & LWM <input checked="" type="checkbox"/> Connectivity to Suitable Habitat	Reaches Affected	<input type="checkbox"/> CR1 <input type="checkbox"/> CR2 <input type="checkbox"/> CR3	<input type="checkbox"/> AL <input checked="" type="checkbox"/> RC1 <input checked="" type="checkbox"/> RC2 <input checked="" type="checkbox"/> RCo	Timeframe	<input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Complete by 2021 <input type="checkbox"/> Complete by 2029 <input type="checkbox"/> Complete by 2040
Cost	<input checked="" type="checkbox"/> High (>\$500k) <input type="checkbox"/> Mid (\$50-\$500k) <input type="checkbox"/> Low (<\$50k)	Funding Source	DOE, EDA, WSDOT	Responsibility		Coordinating Parties	

Status	<input type="checkbox"/> Complete <input checked="" type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action	Risks/Issues/ Additional Information	See City File SHOR2017-01, County File SEP-10-09, Corps File NWS-2007-192 Coordinate with projects R.2, R.3.				
R.2 – Rock Creek Drive Bridge Replacement Project							
Description	This project would replace the 1920's era bridge with a freespan structure. The bridge was built prior to construction of the Bonneville Dam and has greatly lost the original design's freeboard capacity to convey floodwaters. The bridge decking lacks stormwater treatment facilities, and the in-stream piers supporting the bridge interfere with fish passage and form a hazard for log jams. Their removal would make the upstream "log catchers" obsolete.			Priority	<input checked="" type="checkbox"/> High <input type="checkbox"/> Low	Readiness	<input type="checkbox"/> Shovel-Ready <input type="checkbox"/> Design <input type="checkbox"/> Planning <input checked="" type="checkbox"/> Conceptual
Functions Improved	<input checked="" type="checkbox"/> Sediment Transport <input checked="" type="checkbox"/> Nutrient & Toxic Filtration <input type="checkbox"/> Temperature Regulation	<input checked="" type="checkbox"/> Water Storage & Flow Regulation <input type="checkbox"/> Input of Organics & LWM <input checked="" type="checkbox"/> Connectivity to Suitable Habitat	Reaches Affected	<input type="checkbox"/> CR1 <input type="checkbox"/> CR2 <input type="checkbox"/> CR3	<input type="checkbox"/> AL <input checked="" type="checkbox"/> RC1 <input checked="" type="checkbox"/> RC2 <input type="checkbox"/> RCo	Timeframe	<input type="checkbox"/> Ongoing <input type="checkbox"/> Complete by 2021 <input type="checkbox"/> Complete by 2029 <input checked="" type="checkbox"/> Complete by 2040
Cost	<input checked="" type="checkbox"/> High (>\$500k) <input type="checkbox"/> Mid (\$50-\$500k) <input type="checkbox"/> Low (<\$50k)	Funding Source	DOE, WSDOT	Responsibility	City	Coordinating Parties	Utility companies, Skamania County, adjacent landowners
Status	<input type="checkbox"/> Complete <input type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action	Risks/Issues/ Additional Information	Early conceptual studies consider relocation of bridge ~200' to the north, ROW required. Coordinate with projects R.1, R.4.				
R.3 – Stevenson Shoreline Restoration & Enhancement Project							
Description	Developed as a mitigation project as part of R.1 Rock Creek Dredge 2009, this project addresses several restoration needs along the Columbia River and includes improvement of physical public access at Leavens Point.			Priority	<input checked="" type="checkbox"/> High <input type="checkbox"/> Low	Readiness	<input checked="" type="checkbox"/> Shovel-Ready <input type="checkbox"/> Design <input type="checkbox"/> Planning <input type="checkbox"/> Conceptual
Functions Improved	<input checked="" type="checkbox"/> Sediment Transport <input checked="" type="checkbox"/> Nutrient & Toxic Filtration <input type="checkbox"/> Temperature Regulation	<input checked="" type="checkbox"/> Water Storage & Flow Regulation <input type="checkbox"/> Input of Organics & LWM <input checked="" type="checkbox"/> Connectivity to Suitable Habitat	Reaches Affected	<input type="checkbox"/> CR1 <input checked="" type="checkbox"/> CR2 <input type="checkbox"/> CR3	<input type="checkbox"/> AL <input type="checkbox"/> RC1 <input type="checkbox"/> RC2 <input type="checkbox"/> RCo	Timeframe	<input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Complete by 2021 <input type="checkbox"/> Complete by 2029

						<input type="checkbox"/> Complete by 2040	
Cost	<input checked="" type="checkbox"/> High (>\$500k) <input type="checkbox"/> Mid (\$50-\$500k) <input type="checkbox"/> Low (<\$50k)	Funding Source	Responsibility	Coordinating Parties			
Status	<input type="checkbox"/> Complete <input checked="" type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action	Risks/Issues/Additional Information	See City File SHOR2017-01, County File SEP-10-09, Corps File NWS-2007-192 Coordinate with project R.1.				
R.4 – Rock Cove Rehabilitation							
Description	Excess sedimentation from the Piper Road Landslide has altered the natural flushing ability of Rock Cove. The shallow waters facilitate higher temperatures and Invasive aquatic vegetation. Derelict creosote pilings exist in several areas. Substrates in the Cove include metal strapping and other debris from its industrial past.			Priority	<input checked="" type="checkbox"/> High <input type="checkbox"/> Low	Readiness	<input type="checkbox"/> Shovel-Ready <input type="checkbox"/> Design <input type="checkbox"/> Planning <input checked="" type="checkbox"/> Conceptual
Functions Improved	<input checked="" type="checkbox"/> Sediment Transport <input type="checkbox"/> Nutrient & Toxic Filtration <input checked="" type="checkbox"/> Temperature Regulation	<input checked="" type="checkbox"/> Water Storage & Flow Regulation <input type="checkbox"/> Input of Organics & LWM <input checked="" type="checkbox"/> Connectivity to Suitable Habitat	Reaches Affected	<input type="checkbox"/> CR1 <input type="checkbox"/> CR2 <input type="checkbox"/> CR3	<input type="checkbox"/> AL <input type="checkbox"/> RC1 <input type="checkbox"/> RC2 <input checked="" type="checkbox"/> RCo	Timeframe	<input type="checkbox"/> Ongoing <input type="checkbox"/> Complete by 2021 <input checked="" type="checkbox"/> Complete by 2029 <input type="checkbox"/> Complete by 2040
Cost	<input checked="" type="checkbox"/> High (>\$500k) <input type="checkbox"/> Mid (\$50-\$500k) <input type="checkbox"/> Low (<\$50k)	Funding Source	DOE, WDFW, RCO	Responsibility	Skamania County	Coordinating Parties	Interpretive Center
Status	<input type="checkbox"/> Complete <input type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action	Risks/Issues/Additional Information	Coordinate with projects R.5, R.6, R.9				
R.5 – Milfoil Removal Projects							
Description	Eurasian milfoil is present in the Columbia River and Rock Cove. The removal of this invasive species would occur in one or more phases and ensure the habitat and water quality of these waterbodies are improved.			Priority	<input checked="" type="checkbox"/> High <input type="checkbox"/> Low	Readiness	<input type="checkbox"/> Shovel-Ready <input type="checkbox"/> Design <input type="checkbox"/> Planning <input checked="" type="checkbox"/> Conceptual
Functions Improved	<input type="checkbox"/> Sediment Transport	<input type="checkbox"/> Water Storage & Flow Regulation	Reaches Affected	<input checked="" type="checkbox"/> CR1 <input checked="" type="checkbox"/> CR2 <input checked="" type="checkbox"/> CR3	<input type="checkbox"/> AL <input checked="" type="checkbox"/> RC1 <input type="checkbox"/> RC2	Timeframe	<input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Complete by 2021

	<input type="checkbox"/> Nutrient & Toxic Filtration	<input checked="" type="checkbox"/> Input of Organics & LWM		<input checked="" type="checkbox"/> RCo		<input type="checkbox"/> Complete by 2029	
	<input type="checkbox"/> Temperature Regulation	<input checked="" type="checkbox"/> Connectivity to Suitable Habitat				<input type="checkbox"/> Complete by 2040	
Cost	<input type="checkbox"/> High (>\$500k) <input checked="" type="checkbox"/> Mid (\$50-\$500k) <input type="checkbox"/> Low (<\$50k)	Funding Source	County	Responsibility	County Noxious Weed Board	Coordinating Parties	City, land owners
Status	<input type="checkbox"/> Complete <input type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action	Risks/Issues/ Additional Information	Unknown				
R.6 – Foster Creek Culvert Replacement Project.							
Description	The culverts for Foster Creek at Rock Creek Drive and Atwell have been characterized by WDFW staff as some of the greatest barriers in Stevenson. Their replacement would expand spawning and rearing habitat for anadromous species.			Priority	<input checked="" type="checkbox"/> High <input type="checkbox"/> Low	Readiness	<input type="checkbox"/> Shovel-Ready <input type="checkbox"/> Design <input type="checkbox"/> Planning <input checked="" type="checkbox"/> Conceptual
Functions Improved	<input type="checkbox"/> Sediment Transport <input type="checkbox"/> Nutrient & Toxic Filtration <input type="checkbox"/> Temperature Regulation	<input checked="" type="checkbox"/> Water Storage & Flow Regulation <input type="checkbox"/> Input of Organics & LWM <input checked="" type="checkbox"/> Connectivity to Suitable Habitat	Reaches Affected	<input type="checkbox"/> CR1 <input type="checkbox"/> CR2 <input type="checkbox"/> CR3	<input type="checkbox"/> AL <input type="checkbox"/> RC1 <input type="checkbox"/> RC2 <input checked="" type="checkbox"/> RCo	Timeframe	<input type="checkbox"/> Ongoing <input type="checkbox"/> Complete by 2021 <input checked="" type="checkbox"/> Complete by 2029 <input type="checkbox"/> Complete by 2040
Cost	<input type="checkbox"/> High (>\$500k) <input checked="" type="checkbox"/> Mid (\$50-\$500k) <input type="checkbox"/> Low (<\$50k)	Funding Source	Unknown	Responsibility	City	Coordinating Parties	Unknown
Status	<input type="checkbox"/> Complete <input type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action	Risks/Issues/ Additional Information	Some coordination with the City's project to construct a new fire station in this area could help facilitate the project.				
R.7 – SR 14 Kanaka Creek Culvert Replacement Project							
Description	Fish-friendly passage was added to Kanaka Creek during the 1 st Street Couplet project, but the passage—and the adjacent passage under 2 nd Street—are included as barriers in the WDFW database.			Priority	<input type="checkbox"/> High <input checked="" type="checkbox"/> Low	Readiness	<input type="checkbox"/> Shovel-Ready <input type="checkbox"/> Design <input type="checkbox"/> Planning <input checked="" type="checkbox"/> Conceptual
Functions Improved	<input type="checkbox"/> Sediment Transport	<input checked="" type="checkbox"/> Water Storage & Flow Regulation	Reaches Affected	<input checked="" type="checkbox"/> CR1 <input checked="" type="checkbox"/> CR2	<input type="checkbox"/> AL <input type="checkbox"/> RC1	Timeframe	<input type="checkbox"/> Ongoing

	<input type="checkbox"/> Nutrient & Toxic Filtration	<input type="checkbox"/> Input of Organics & LWM	<input type="checkbox"/> CR3	<input type="checkbox"/> RC2 <input type="checkbox"/> RCo	<input type="checkbox"/> Complete by 2021 <input type="checkbox"/> Complete by 2029 <input checked="" type="checkbox"/> Complete by 2040
	<input type="checkbox"/> Temperature Regulation	<input checked="" type="checkbox"/> Connectivity to Suitable Habitat			
Cost	<input checked="" type="checkbox"/> High (>\$500k) <input type="checkbox"/> Mid (\$50-\$500k) <input type="checkbox"/> Low (<\$50k)	Funding Source	Unknown	Responsibility	City/WSDOT
				Coordinating Parties	Unknown
Status	<input type="checkbox"/> Complete <input type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action	Risks/Issues/ Additional Information	Recent significant investments in these roadways by the City and WSDOT limit likelihood of new investment. However, some interest in a round-a-bout has been expressed near these culverts which could help facilitate the project.		
R.8 – Vancouver Avenue House Removal					
Description	The City recently acquired property for potential use as part of the Rock Creek Drive Bridge Replacement. The property contains a single-family home that has been damaged by floodwaters from Rock Creek. This project would demolish the home.			Priority	<input type="checkbox"/> High <input checked="" type="checkbox"/> Low
	Readiness	<input checked="" type="checkbox"/> Shovel-Ready <input type="checkbox"/> Design <input type="checkbox"/> Planning <input type="checkbox"/> Conceptual			
Functions Improved	<input type="checkbox"/> Sediment Transport <input checked="" type="checkbox"/> Nutrient & Toxic Filtration <input type="checkbox"/> Temperature Regulation	<input checked="" type="checkbox"/> Water Storage & Flow Regulation <input type="checkbox"/> Input of Organics & LWM <input type="checkbox"/> Connectivity to Suitable Habitat	Reaches Affected	<input type="checkbox"/> CR1 <input type="checkbox"/> CR2 <input type="checkbox"/> CR3	<input type="checkbox"/> AL <input checked="" type="checkbox"/> RC1 <input type="checkbox"/> RC2 <input type="checkbox"/> RCo
				Timeframe	<input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Complete by 2021 <input type="checkbox"/> Complete by 2029 <input type="checkbox"/> Complete by 2040
Cost	<input type="checkbox"/> High (>\$500k) <input type="checkbox"/> Mid (\$50-\$500k) <input checked="" type="checkbox"/> Low (<\$50k)	Funding Source	City	Responsibility	City
				Coordinating Parties	Unknown
Status	<input type="checkbox"/> Complete <input checked="" type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action	Risks/Issues/ Additional Information	Fire department is considering participating in the demolition through its "burn to learn" program". Asbestos abatement is required. Coordinate with projects R.2, R.12.		
R.9 – Old Hegewald Mill Site Redevelopment Project					
Description	Skamania County owns a former mill site on Rock Cove. The County Assessor's Office is actively working to remove barriers to development of this site and facilitate private investment. A recent Phase 1 Environmental Site Assessment did not reveal the need to			Priority	<input checked="" type="checkbox"/> High <input type="checkbox"/> Low
	Readiness	<input type="checkbox"/> Shovel-Ready <input type="checkbox"/> Design <input checked="" type="checkbox"/> Planning <input type="checkbox"/> Conceptual			

<p>proceed with a Phase 2. However, restoration of riparian vegetation and removal of derelict structures & debris associated with the historic use could be undertaken as advanced mitigation for the potential future development</p>						
<p>Functions Improved</p> <p><input type="checkbox"/> Sediment Transport <input checked="" type="checkbox"/> Nutrient & Toxic Filtration <input checked="" type="checkbox"/> Temperature Regulation</p>	<p><input type="checkbox"/> Water Storage & Flow Regulation <input checked="" type="checkbox"/> Input of Organics & LWM <input checked="" type="checkbox"/> Connectivity to Suitable Habitat</p>	<p>Reaches Affected</p> <p><input type="checkbox"/> CR1 <input type="checkbox"/> CR2 <input type="checkbox"/> CR3</p>	<p><input type="checkbox"/> AL <input type="checkbox"/> RC1 <input type="checkbox"/> RC2 <input checked="" type="checkbox"/> RCo</p>	<p>Timeframe</p> <p><input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Complete by 2021 <input type="checkbox"/> Complete by 2029 <input type="checkbox"/> Complete by 2040</p>		
<p>Cost</p> <p><input type="checkbox"/> High (>\$500k) <input checked="" type="checkbox"/> Mid (\$50-\$500k) <input type="checkbox"/> Low (<\$50k)</p>	<p>Funding Source</p> <p>RCO, WSDOT</p>	<p>Responsibility</p> <p>County</p>	<p>Coordinating Parties</p> <p>Unknown</p>			
<p>Status</p> <p><input type="checkbox"/> Complete <input checked="" type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action</p>	<p>Risks/Issues/Additional Information</p> <p>A visioning project was recently completed for the site that includes recommendations for its design, use, and public access opportunities. Easement for a public pathway is reserved at the top of the bank. The pathway has never been developed. Coordinate with project R.4</p>					
R.10 – Willing Partner Project Database						
<p>Description</p> <p>Implementation of restoration projects often spans property lines and relies on willing property owners to ensure success. The database envisioned in this project would periodically engage property owners to assess their willingness to participate in proposed projects. This engagement will also serve to educate owners about the City's restoration needs.</p>			<p>Priority</p> <p><input type="checkbox"/> High <input checked="" type="checkbox"/> Low</p>	<p>Readiness</p> <p><input type="checkbox"/> Shovel-Ready <input type="checkbox"/> Design <input type="checkbox"/> Planning <input checked="" type="checkbox"/> Conceptual</p>		
<p>Functions Improved</p> <p><input checked="" type="checkbox"/> Sediment Transport <input checked="" type="checkbox"/> Nutrient & Toxic Filtration <input checked="" type="checkbox"/> Temperature Regulation</p>	<p><input checked="" type="checkbox"/> Water Storage & Flow Regulation <input checked="" type="checkbox"/> Input of Organics & LWM <input checked="" type="checkbox"/> Connectivity to Suitable Habitat</p>	<p>Reaches Affected</p> <p><input checked="" type="checkbox"/> CR1 <input checked="" type="checkbox"/> CR2 <input checked="" type="checkbox"/> CR3</p>	<p><input checked="" type="checkbox"/> AL <input checked="" type="checkbox"/> RC1 <input checked="" type="checkbox"/> RC2 <input checked="" type="checkbox"/> RCo</p>	<p>Timeframe</p> <p><input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Complete by 2021 <input type="checkbox"/> Complete by 2029 <input type="checkbox"/> Complete by 2040</p>		
<p>Cost</p> <p><input type="checkbox"/> High (>\$500k) <input type="checkbox"/> Mid (\$50-\$500k) <input checked="" type="checkbox"/> Low (<\$50k)</p>	<p>Funding Source</p> <p>Unknown</p>	<p>Responsibility</p> <p>City</p>	<p>Coordinating Parties</p> <p>Unknown</p>			

Status	<input type="checkbox"/> Complete <input type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action	Risks/Issues/ Additional Information	Unknown		
R.11 – CAO Utility Maintenance Exemption Program					
Description	SMC 18.13.025 contemplates a program where utility service providers can agree to perform and monitor projects in accordance with defined BMPs. While the program has been in place since 2008, no agreements have ever been put in place.			Priority	<input type="checkbox"/> High <input checked="" type="checkbox"/> Low
Functions Improved	<input checked="" type="checkbox"/> Sediment Transport <input checked="" type="checkbox"/> Nutrient & Toxic Filtration <input checked="" type="checkbox"/> Temperature Regulation	<input checked="" type="checkbox"/> Water Storage & Flow Regulation <input checked="" type="checkbox"/> Input of Organics & LWM <input checked="" type="checkbox"/> Connectivity to Suitable Habitat	Reaches Affected	<input checked="" type="checkbox"/> CR1 <input checked="" type="checkbox"/> CR2 <input checked="" type="checkbox"/> CR3	<input checked="" type="checkbox"/> AL <input checked="" type="checkbox"/> RC1 <input checked="" type="checkbox"/> RC2 <input checked="" type="checkbox"/> RCo
				Timeframe	<input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Complete by 2021 <input type="checkbox"/> Complete by 2029 <input type="checkbox"/> Complete by 2040
Cost	<input type="checkbox"/> High (>\$500k) <input type="checkbox"/> Mid (\$50-\$500k) <input checked="" type="checkbox"/> Low (<\$50k)	Funding Source	Unknown	Responsibility	Utility providers
Coordinating Parties	City				
Status	<input type="checkbox"/> Complete <input checked="" type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action	Risks/Issues/ Additional Information	The City Public Works Department is in the process of requesting an MOU under this program.		
R.12 – State Wetland Clearinghouse					
Description	Curation of wetland delineations, ratings, datasheets, and monitoring reports is uncoordinated and/or unavailable. Developing a web-based portal for the submittal and retrieval of these products would assist land owners, prospective buyers, and regulatory agencies.			Priority	<input checked="" type="checkbox"/> High <input type="checkbox"/> Low
Functions Improved	<input checked="" type="checkbox"/> Sediment Transport <input checked="" type="checkbox"/> Nutrient & Toxic Filtration <input checked="" type="checkbox"/> Temperature Regulation	<input checked="" type="checkbox"/> Water Storage & Flow Regulation <input checked="" type="checkbox"/> Input of Organics & LWM <input checked="" type="checkbox"/> Connectivity to Suitable Habitat	Reaches Affected	<input checked="" type="checkbox"/> CR1 <input checked="" type="checkbox"/> CR2 <input checked="" type="checkbox"/> CR3	<input checked="" type="checkbox"/> AL <input checked="" type="checkbox"/> RC1 <input checked="" type="checkbox"/> RC2 <input checked="" type="checkbox"/> RCo
				Timeframe	<input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Complete by 2021 <input type="checkbox"/> Complete by 2029 <input type="checkbox"/> Complete by 2040
Cost	<input type="checkbox"/> High (>\$500k) <input type="checkbox"/> Mid (\$50-\$500k)	Funding Source	Unknown	Responsibility	DOE/USACE
Coordinating Parties	Unknown				

<input type="checkbox"/> Low (<\$50k)							
Status	<input type="checkbox"/> Complete <input checked="" type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action	Risks/Issues/ Additional Information	The City has been actively encouraging this concept for years, and recently DOE began engaging stakeholders on the utility of the concept.				
R.13 – Vancouver Avenue Stormwater Outfall Replacement Project							
Description	The stormwater outfall into Rock Creek at Vancouver Avenue drains a large portion of Stevenson’s residential core. The storm system for this area includes few to no facilities to treat the quality or quantity of water prior to the outfall. Replacing the outfall with a treatment system could occur in the ROW and/or on the adjacent City-owned real property.			Priority	<input type="checkbox"/> High <input checked="" type="checkbox"/> Low	Readiness	<input type="checkbox"/> Shovel-Ready <input type="checkbox"/> Design <input type="checkbox"/> Planning <input checked="" type="checkbox"/> Conceptual
Functions Improved	<input checked="" type="checkbox"/> Sediment Transport <input checked="" type="checkbox"/> Nutrient & Toxic Filtration <input checked="" type="checkbox"/> Temperature Regulation	<input checked="" type="checkbox"/> Water Storage & Flow Regulation <input type="checkbox"/> Input of Organics & LWM <input type="checkbox"/> Connectivity to Suitable Habitat	Reaches Affected	<input type="checkbox"/> CR1 <input type="checkbox"/> CR2 <input type="checkbox"/> CR3	<input type="checkbox"/> AL <input checked="" type="checkbox"/> RC1 <input type="checkbox"/> RC2 <input type="checkbox"/> RCo	Timeframe	<input type="checkbox"/> Ongoing <input type="checkbox"/> Complete by 2021 <input checked="" type="checkbox"/> Complete by 2029 <input type="checkbox"/> Complete by 2040
Cost	<input type="checkbox"/> High (>\$500k) <input checked="" type="checkbox"/> Mid (\$50-\$500k) <input type="checkbox"/> Low (<\$50k)	Funding Source	DOE	Responsibility	City	Coordinating Parties	Unknown
Status	<input type="checkbox"/> Complete <input type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action	Risks/Issues/ Additional Information	Full treatment needs may exceed space available at this site. Up-system treatment may also need to be considered. The location of the treatment facilities needs will depend on the location of the Rock Creek Drive Bridge Replacement Project. Coordinate with projects R.3, R.4.				
R.14 – Incentive-Based Planning Fee Schedule							
Description	The City can encourage implementation of restoration projects by waiving all or some portion of the fees associated with projects that satisfy restoration needs. The specific needs which are deserving, and the specific amount of the incentives offered are details requiring greater analysis.			Priority	<input type="checkbox"/> High <input checked="" type="checkbox"/> Low	Readiness	<input type="checkbox"/> Shovel-Ready <input type="checkbox"/> Design <input type="checkbox"/> Planning <input checked="" type="checkbox"/> Conceptual
Functions Improved	<input checked="" type="checkbox"/> Sediment Transport <input checked="" type="checkbox"/> Nutrient & Toxic Filtration	<input checked="" type="checkbox"/> Water Storage & Flow Regulation <input checked="" type="checkbox"/> Input of Organics & LWM	Reaches Affected	<input checked="" type="checkbox"/> CR1 <input checked="" type="checkbox"/> CR2 <input checked="" type="checkbox"/> CR3	<input checked="" type="checkbox"/> AL <input checked="" type="checkbox"/> RC1 <input checked="" type="checkbox"/> RC2 <input checked="" type="checkbox"/> RCo	Timeframe	<input type="checkbox"/> Ongoing <input checked="" type="checkbox"/> Complete by 2021 <input type="checkbox"/> Complete by 2029

	<input checked="" type="checkbox"/> Temperature Regulation	<input checked="" type="checkbox"/> Connectivity to Suitable Habitat			<input type="checkbox"/> Complete by 2040
Cost	<input type="checkbox"/> High (>\$500k) <input checked="" type="checkbox"/> Mid (\$50-\$500k) <input type="checkbox"/> Low (<\$50k)	Funding Source	City	Responsibility	City
Status	<input type="checkbox"/> Complete <input type="checkbox"/> Active <input type="checkbox"/> Obsolete <input type="checkbox"/> No Action	Risks/Issues/ Additional Information	Unknown	Coordinating Parties	Unknown

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3.3 Obstacles & Challenges

Some obstacles and challenges have been identified in the “Risks/Issues/Additional Information” portion of the matrix, but others also likely lie between the recommended actions and their successful implementation. Common issues that can inder the predictability of implementing restoration projects include, but are not limited to:

- *Funding*: Large-scale restoration projects can be expensive, and their funding is both limited and competitive.
- *Project Permitting*: Obtaining local, state, and federal permits for restoration projects can be time-intensive and discouraging.
- *Climate Change*: Changes in precipitation patterns have the potential to alter the City’s shoreline jurisdiction, processes, and functions dramatically over time. In turn, these changes may affect restoration priorities.
- *Landowner Participation*: Landowners may be unwilling or unable to participate in restoration projects. If necessary, the City could establish additional incentive including tax credits for conservation easements related to permanent preservation.

3.4 Implementation Monitoring

In order to assess its success in achieving no net loss, the City will need to track restoration efforts over time. Efforts should be evaluated according to categories such as those listed below. The matrix anticipates monitoring and assessment of the projects in the final row for each project, but more specific benchmarks can be developed for efforts on a project-by-project basis and through future coordination with restoration partners.

- Number of restoration projects implemented
- Square feet of riparian enhancement
- Square feet of native vegetation planted
- Square feet of noxious weeds removed
- Linear feet of hard shoreline stabilization replaced
- Number of culverts removed or number of miles of stream open to migration
- Square feet of conservation easement/protected area established
- Square feet of wetlands restored in shoreline jurisdiction
- Square feet of stream canopy addition
- Fewer exceedances of water quality criteria as measured in the state water quality assessment
- Square feet of impervious surface removed or untreated runoff treated
- Linear feet of road upgraded or decommissioned

Because monitoring can be both complicated and expensive, the City should coordinate with other agencies that already operate monitoring efforts. The frequency of monitoring will involve periodic review of environmental functions at the time of periodic SMP updates when the effectiveness of the SMP, including the restoration plan, in achieving no net loss of shoreline ecological functions can be assessed. There are several existing databases reporting restoration efforts in the state that the City can utilize to restoration track projects:

- The Lower Columbia Fish Recovery Board (LCFRB) tracks projects related to the recovery of threatened or priority fish populations and/or habitat, including projects that are proposed, active, or completed. LCFRB also provides a map of existing fish passage barriers, including culverts, dams, and fishways, which may prove useful in identifying future opportunities. The City will work with the LCFRB to ensure that projects are tracked in their SalmonPORT database.
- The Washington State Project Information System (PRISM) database tracks proposed and funded projects, and data from PRISM is often integrated in the grant application process.
- The Washington State Conservation Commission’s Conservation Practice Data System (CPDS) maintains a database that tracks projects and conservation practices on private lands.

3.5 Summary

This restoration plan supports the City of Stevenson Shoreline Master Program and has been prepared to comply with the SMP guidelines (WAC 173-26-201(2)(f)). The restoration plan 1) identifies degraded areas with impaired functions and the potential for restoration, 2) establishes goals and priorities for restoration, 3) identifies additional projects and programs to achieve restoration goals, 4) identifies timelines and benchmarks for implementing restoration projects and achieving goals, and 5) provides strategies for ensuring project effectiveness.

Appendix A – Potential Restoration Partners

A.1 Overview

5 Further study, collaboration, identification of restoration projects are needed before a implementation occurs. This appendix provides a list of potential partners that could assist in accomplishing the City's restoration goal.

A.2 Restoration Partners

10 This plan is intended to be compatible with the restoration goals already developed by other restoration planning entities in the region, including Skamania County, the Underwood Conservation District (UCD), the Lower Columbia Fish Recovery Board (LCFRB), and area tribes. Their activities may be located in the City, or in a watershed beyond the city where the restoration activities will have positive effects on waterbodies that flow into and out of the city. Ongoing restoration planning efforts in the City and surrounding areas through the voluntary collaboration of residents, tribes, NGOs, and local, state, and federal resource agencies may help inform and implement future restoration actions.

15 The organizations responsible for the existing restoration programs in the City are likely to play a major role in carrying out the restoration efforts described in this plan. These potential partners are identified in Figure 4-1. They are some of the key organizations that have ecological restoration as their primary focus and are actively involved in the restoration and stewardship of the City's freshwater resources. The list, which is not exhaustive, describes the key partners, their mission or area of focus, and some past and current projects that illustrate the role they can play in future restoration activities.

FIGURE A.1 – EXISTING PROGRAMS & POTENTIAL PARTNERS		
Partner Organization	Mission	Restoration Activities
Chinook Nation	Unknown	<ul style="list-style-type: none"> • Unknown
Columbia River Gorge Commission	The mission of the Gorge Commission is to achieve the 2 purposes of the Columbia River Gorge National Scenic Area Act, including 1) protection and enhancement of the scenic, cultural, recreational, and natural resources of the Gorge and 2) support the Gorge economy by encouraging growth in urban areas..	<ul style="list-style-type: none"> • Unknown
Confederated Tribes of the Grand Ronde	The Natural Resources Department of the Grand Ronde serves tribal membership through responsible stewardship of all natural resources important to the cultural identity, self-sufficiency, and sovereignty of current and future generations.	<ul style="list-style-type: none"> • Unknown
Confederated Tribes of the Umatilla Indian Reservation	The mission of the Natural Resources Department is to protect, restore and enhance the First Foods—water, salmon, deer, cous and huckleberry—for the perpetual cultural, economic and sovereign benefit of the CTUIR. They will accomplish that mission using traditional ecological and cultural knowledge and science to inform: 1) population and habitat management goals and actions; and 2) natural resource policies and regulatory mechanisms.	<ul style="list-style-type: none"> • Unknown
Confederated Tribes of Warm Springs	The mission of the Branch of Natural Resources is to plan and execute a balanced direction for the protection, use and enhancement to all tribal natural resources.	<ul style="list-style-type: none"> • Unknown
Cowlitz Indian Tribe	The mission of the Natural Resources Department of the Cowlitz Indian Tribe is to protect, conserve, restore and promote culturally-relevant species and landscapes integral to the unique identity of the Cowlitz People, and to further educate the community and inspire future leaders and participants in this vision.	<ul style="list-style-type: none"> • Otter Creek side channel restoration • Riparian enhancement along the lower main stem of the Lewis River • Abernathy Creek restoration
Lower Columbia Estuary Partnership	The mission of the Lower Columbia Estuary Partnership is to improve the lower Columbia River by protecting and restoring ecosystems and enhancing clean water for current and future generations of fish, wildlife, and people.	<ul style="list-style-type: none"> • Hardy Creek restoration • Pierce Island restoration • Horsetail Creek floodplain restoration

Figure A.1 – Existing Programs & Potential Partners, Cont.		
Partner Organization	Mission	Restoration Activities
Lower Columbia Fish Enhancement Group	This group is one of 14 RFEGs created by the state legislature and is a non-regulatory, non-partisan 501(c)(3) salmon recovery organization. Working within specific watersheds throughout the area (including north and eastern Skamania County), it leverages public funding through landowner partnerships and collaborations with individuals, groups, corporations, tribes, foundations, and agencies.	<ul style="list-style-type: none"> • Hamilton Creek restoration • Lee fish passage project • Hardy Creek fish passage and groundwater investigation design (LCFEG and partners) • Lower Hamilton Creek channel stability and habitat restoration (LCFEG and partners)
Lower Columbia Fish Recovery Board	The LCFRB leads the coordinated implementation of locally-driven salmon recovery and watershed management plans across our region to restore at-risk fish population and ensure we have clean water, healthy forests, working farms, and thriving rural and urban communities into the future. The LCFRB runs the Wind River Work Group, which organizes community stakeholders to develop restoration projects in the Wind River watershed. The LCFRB maintains SalmonPORT, an online tool that tracks restoration projects and opportunities, as well as recovery plan actions. The LCFRB website also provides several restoration and management documents for download.	<ul style="list-style-type: none"> • Wind River Habitat Strategy • Duncan Creek Dam fish passage restoration (LCFRB and partners) • Hardy Creek fish passage and groundwater investigation design (LCFRB and partners) • Lower Hamilton Creek channel stability and habitat restoration (LCFRB and partners)
Mid-Columbia Fisheries Enhancement Group	This group is an RFEG created by the state legislature in 1990. It is a non-regulatory, non-partisan 501(c)(3) salmon recovery organization. Working within specific watersheds throughout the area (including southwest Skamania County), it leverages public funding through landowner partnerships and collaborations with individuals, groups, corporations, tribes, foundations and agencies.	<ul style="list-style-type: none"> • Salmonid recolonization assessment for the White Salmon River (post-Condit Dam removal)
Nez Perce Tribe	The purpose of the Wildlife Division is to restore, perpetuate, enhance, and manage the wildlife and rare plant resources of significance to the <i>Nimiipuu</i> .	<ul style="list-style-type: none"> • Unknown.
Northwest Power and Conservation Council	The NPCC is an interstate compact of Idaho, Montana, Oregon, and Washington. Its mission is to ensure, with public participation, an affordable and reliable energy system while enhancing fish and wildlife. It achieves this through its Columbia River Basin Fish and Wildlife Program, which is funded by the Bonneville Power Administration.	<ul style="list-style-type: none"> • Locally developed subbasin plans
Recovery Implementation Science Team (Pacific Northwest)	NOAA Fisheries initiated a coast-wide process to develop recovery plans for 27 Pacific salmon species listed on the ESA. RIST and the NOAA Fisheries Northwest Regional Office and its Science Center work closely to develop appropriate tasks and priorities for scientific analysis based on input from these groups.	<ul style="list-style-type: none"> • NOAA Fisheries staff are responsible for coordinating with others involved in recovery implementation to ensure that RIST timelines and priorities are consistent with recovery needs.

Figure A.1 – Existing Programs & Potential Partners, Cont.		
Partner Organization	Mission	Restoration Activities
Skamania County Noxious Weed Board	The mission of the Skamania County Noxious Weed Control Program is to serve as responsible stewards of Washington by protecting and preserving the land and resources from the damaging effects of noxious weeds. We aim to uphold, educate and enforce compliance with the state noxious weed laws. It is our goal to focus efforts to educate citizens of Skamania County about noxious weeds and the threat they pose to our environment and economy. We actively work with public agencies and private citizens to control and eradicate listed noxious weeds. We actively seek to form cooperatives and enhance coordination between other counties, agencies and landowners to protect our resources, therefor making a difference in Skamania County.	<ul style="list-style-type: none"> • Unknown
South Gifford Pinchot Collaborative	SGPC works with the Forest Service on projects on its 10-year action plan and forest restoration projects. They advise during the NEPA process and/ or are proactive in moving projects forward by receiving grant funding to work on areas ahead of the Forest Service schedule.	<ul style="list-style-type: none"> • Work in the Woods Workshop – advertising upcoming opportunities for working in the woods; co-sponsored by WSU Skamania County Extension Office
Underwood Conservation District	The UCD engages landowners and land users throughout Skamania and west Klickitat counties in the conservation, enhancement, and sustainable use of natural resources through voluntary stewardship. As one of 47 conservation districts in Washington, the UCD is a legal subdivision of state government that administers programs for the productive use and conservation of natural resources.	<ul style="list-style-type: none"> • Native Plant Sales • Kanaka Creek habitat restoration
Washington State Department of Ecology	Ecology is Washington's environmental protection agency, and their mission is to protect, preserve and enhance the state's land, air and water for current and future generations. Nearly 70 percent of Ecology's budget is passed through to local communities to pay for projects that benefit the environment.	<ul style="list-style-type: none"> • Shorelands and Environmental Assistance Program • Water Quality Program

Figure A.1 – Existing Programs & Potential Partners, Cont.		
Partner Organization	Mission	Restoration Activities
Washington State Department of Fish and Wildlife	Management and regulatory oversight of state waters and other habitats. WDFW sponsors several key restoration-related activities including the summer chum salmon conservation initiative and the barrier culvert inventory and prioritization. WDFW also manages the SSHIAP (co-managed with the NW Indian Fisheries Commission), which provides information on habitat conditions and prescriptions for improving fish habitat.	<ul style="list-style-type: none"> • Fish passage barrier inventory and correction
Washington State Department of Natural Resources, Aquatic Program	DNR manages state-owned aquatic lands and restores them where appropriate. In partnership with citizens and governments, DNR provides innovative leadership and expertise to ensure environmental protection, public safety, perpetual funding for schools and communities, and a rich quality of life.	<ul style="list-style-type: none"> • Establishment of aquatic reserves and management plans for them with potential restoration actions, research, and monitoring • Aquatic Restoration Program • Debris removal • Removal of creosote-treated wood • Re-vegetating riparian zones
Washington Watershed Restoration Initiative	A coalition of environmental and outdoor recreation NGOs, tribes, and state agencies working together since 2008. Members include Ecology, WDFW, the Wilderness Society, Gifford Pinchot Task Force, and Trout Unlimited.	<ul style="list-style-type: none"> • Forest road upgrading or decommissioning • Culvert replacement or repair • Education, outreach, scientific and economic analysis, and advocacy.
Yakama Nation	The Yakama Nation Department of Natural Resources was established to manage, co-manage and protect the Yakama Nation's Ancestral, Cultural, and Treaty Natural Resources on Reservation, in the Ceded Area and at Usual and Accustomed Sites, to meet the tribal culture, protecting tribal sensitive areas and sites and restoring diminished damaged resources.	<ul style="list-style-type: none"> • Yakama Nation Fisheries • Upper Columbia habitat restoration project

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Appendix B – Potential Funding Sources

B.1 Overview

5 Provided below is a list of potential funding sources for future restoration activities. While this is not an exhaustive list, in conjunction with the list of potential partners provided in RP Figure A-1 it is a starting point for implementing restoration projects in the City.

Environmental Protection Agency, Region 10: Pacific Northwest

1200 Sixth Avenue, Suite 900

Seattle, WA 98101

10 206-553-6367

<https://www3.epa.gov/>

The EPA funds a variety of projects that aim to safeguard the natural environment and protect human health. Potential opportunities specific to watershed protection and restoration are listed below.

- 15 • *The Clean Water State Revolving Fund Program* provides grants or “seed money” to all 50 states plus Puerto Rico to capitalize state loan funds. The states, in turn, make loans to communities, individuals, and others for high-priority water-quality activities. Projects funded by the low-interest loans may include wetlands protection and restoration, estuary management efforts – including wildlife habitat restoration – and development of streambank buffer zones.
- 20 • *Nonpoint Source Implementation Grant (319) Program* provides Clean Water Act Section 319(h) funds only to designated state and tribal agencies to implement their approved nonpoint source management programs. State and tribal nonpoint source programs include a variety of components, including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and regulatory programs. Each year, EPA awards Section 319(h) funds to states in accordance with a state-by-state allocation formula that EPA has developed in consultation with the states.
- 25 • *Wetland Protection, Restoration, and Stewardship Discretionary Funding* supports studies and activities related to implementation of Section 404 of the Clean Water Act for both wetlands and sediment management. Projects can support regulatory, planning, restoration, or outreach.
- 30 • The *Targeted Watershed Grants Program* supports innovative, community-based watershed approaches aimed at preventing, reducing, or eliminating water pollution. Resources provided through this program include grants, tools, training, and technical expertise and assistance to communities to bolster their efforts to expand and improve existing water protection measures.
- 35

National Fish and Wildlife Foundation

1120 Connecticut Avenue, NW, #900

Washington, DC 20036

40 202-857-0166

www.nfwf.org

Non-profit organizations and local, state, or federal government agencies are eligible to apply for funds for community-based projects that improve and restore native salmon habitat or remove barriers to fish passage or for the acquisition of land/ conservation easements on private lands where the habitat is critical to salmon species. Specific grant programs are listed below.

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- The *Bring Back the Natives/More Fish* program invests in conservation activities that restore, protect, and enhance native populations of sensitive or listed fish species across the United States, especially in areas on or adjacent to federal agency lands. The program emphasizes coordination between private landowners and federal agencies, tribes, corporations, and states to improve the ecosystem functions and health of watersheds.
- The *Columbia Basin Water Transactions Program* (CBWTP) was developed in 2002 to address chronically diminished stream flows in tributaries of the Columbia River. To enhance stream flow, the CBWTP works through locally based entities to acquire water rights voluntarily from willing landowners. Using temporary and permanent water rights acquisitions and other incentive-based approaches, the CBWTP supports program partners to assist landowners who wish to voluntarily restore flows to key fish habitat. Funding for this program is provided by Bonneville Power Administration in cooperation with NPCC and with support from Altria.
- The *Five Star and Urban Waters Restoration Program* seeks to develop nation-wide-community stewardship of local natural resources, preserving these resources for future generations and enhancing habitat for local wildlife. Projects seek to address water quality issues in priority watersheds, such as erosion due to unstable streambanks, pollution from stormwater runoff, and degraded shorelines caused by development.

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Northwest Fund for the Environment, Aquatic Ecosystem Program

65

1904 Third Ave., Suite 615

Seattle, WA 98101

360-705-7518

<http://www.nwfund.org/>

70

Grants by the Northwest Fund come from an endowment designated to be spent to promote change in the uses of natural resources which will increase their protection and preservation in Washington. Special emphasis is placed on "the protection of wild fish, native wildlife, natural forests, wetlands and shorelines, and the preservation of pure and free-flowing waters." The fund's Aquatic Ecosystem Program aims to protect and restore the extensive network of fresh and saltwater ecosystems in Washington and the native species that inhabit them.

75

NOAA Fisheries

Office of Habitat Conservation

1201 Northeast Lloyd Boulevard, Suite 1100 1315 East-West Highway Silver Spring, MD 20910

301-713-2325

80 NOAA Fisheries, also known as the National Marine Fisheries Service, is an office of the National
Oceanic and Atmospheric Administration within the Department of Commerce. NOAA administers the
federal Pacific Coastal Salmon Recovery Fund, and their community-based restoration program awards
grants and cooperative agreements to support research and conservation initiatives coordinated by
state and local governments, non-profits, colleges and universities.

- 85
- The *Pacific Coastal Salmon Recovery Fund* was established by Congress in 2000 to reverse
the declines of Pacific salmon and steelhead. NOAA Fisheries is the agency charged with
administering this competitive grants process. The LCFRB is the local contact for PCSRF funds
in Skamania County west of the White Salmon subbasin, and the Klickitat Lead Entity is the
90 contact for funds in the White Salmon subbasin. The fund has catalyzed the development of
a community of salmon restoration experts and fostered partnerships among land owners,
local governments, and state, tribal, and federal agencies.
 - NOAA awards grants through its *Community-based Restoration Program* to support
research and conservation initiatives coordinated by state and local governments, non-
profits, colleges and universities. Grants are for restoration projects that use a habitat-based
95 approach to promote productive and sustainable fisheries, improve the recovery and
conservation of protected resources, and promote healthy ecosystems and resilient
communities.

U.S. Fish & Wildlife Service

100 Pacific Region
911 NE 11th Avenue
Portland, OR 97232
503-231-2014
<https://www.fws.gov/>

105 The USFWS funds a variety of projects that aim to safeguard the natural environment and protect
human health. Potential opportunities specific to watershed protection and restoration are listed
below.

- *National Fish Habitat Action Plan*: This program is a national investment strategy to leverage
110 federal and privately raised funds to protect, restore, and enhance the nation's fish and
aquatic habitats through partnerships that foster fish habitat conservation. Funds will
support national and regional science and coordination activities to protect, restore, or
enhance fish habitats.
- *National Fish Passage Program (NFPP)*: NFPP is a voluntary program that provides direct
technical assistance and financial assistance in the form of cooperative agreements to
115 partners to provide fish (and other aquatic organisms) passage and restore aquatic
connectivity for the benefit of federal trust resources. The NFPP is delivered through Fisheries
and Aquatic Conservation Field Offices. The Field Offices staff coordinates with project
partners, stakeholders and other Service programs to identify and collaboratively implement
projects within Regional priority areas.

- 120
- *Partners for Fish and Wildlife Program*: This program provides technical and financial assistance to private landowners and Tribes who are willing to work with USFWS and other partners on a voluntary basis to help meet the habitat needs of Federal Trust Species. The Partners Program can assist with projects in all habitat types which conserve or restore native vegetation, hydrology, and soils associated with imperiled ecosystems such as longleaf pine, 125 bottomland hardwoods, tropical forests, native prairies, marshes, rivers and streams, or ecosystems that otherwise provide an important habitat requisite for a rare, declining or protected species.
 - *North American Wetlands Conservation Act Grants Program* provides matching grants to wetlands conservation projects through a Standard Program and a Small Grants Program. Both are competitive and require that grant requests be matched by partner contributions at no less than a 1-to-1 ratio. 130

Washington State Department of Ecology

300 Desmond Drive

135 Lacey, WA 98503

360-407-6300

<http://www.ecology.wa.gov/>

Ecology's mission is to protect, preserve and enhance Washington's land, air and water for current and future generations. Ecology provides planning and financial support for environmental work throughout Washington. The department offers several types of grants to achieve these goals, including: 140

- *Freshwater Aquatic Invasive Plant Management Program* is designed to tackle the problem of non-native aquatic plants on a statewide level. The program provides funding for technical assistance, public education and grants to help control aquatic invasive plants. Eligible activities include the development of integrated aquatic vegetation management plans, plant control activities, and aquatic plant mapping and inventory. 145
- *Water Quality Program –Stormwater Grants* provides financial assistance to local communities to prevent pollution of water bodies from stormwater and run-off from urbanized areas. Eligible projects include restoration projects that address existing pollution problems and provide a high level of water quality benefit. 150
- *Floodplain by Design* is a partnership of local, state, federal and private organizations focused on coordinating investment in and strengthening the integrated management of floodplain areas through Washington State. Ecology administers the grant program under a biennial funding cycle, and awards grants on a competitive basis to eligible entities for collaborative and innovative projects that support the integration of flood hazard reduction with ecological preservation and restoration. Proposed projects may also address other community needs, such as preservation of agriculture, improvements in water quality, or increased recreational opportunities provided they are part of a larger strategy to restore ecological functions and reduce flood hazards. 155

160

Washington State Department of Fish & Wildlife

600 Capitol Way North
Olympia, WA 98501
360-902-2806

165 <http://wdfw.wa.gov/>

WDFW's mission is to preserve, protect and perpetuate fish, wildlife and ecosystems while providing sustainable fish and wildlife recreational and commercial opportunities. The department offers several types of grants to achieve these goals, including:

- 170 • *Landowner Incentive Program* is designed to provide financial assistance to private landowners for the protection, enhancement, or restoration of habitat to benefit species at risk on privately owned lands. At-risk species depend on specific ecosystems for survival such as riparian areas, wetlands, oak woodlands, prairies and grasslands, shrub steppe, and nearshore environments. Through Washington's LIP, individual landowners can apply for up to \$50,000 in assistance. In addition, \$50,000 is usually set aside for small grants to individuals of up to \$5,000. A 25 percent non-federal contribution is required, which may include cash and/or in-kind contributions (labor, machinery, materials).

Washington State Department of Natural Resources

MS 47001
180 Olympia, WA 98504-7001
360-902-1775

<https://www.dnr.wa.gov/>

185 WDNR provides restoration services as well as technical assistance and assets applicable to restoration in the Stevenson area. WDNR expertise includes removal of creosote-treated wood, removal of debris and abandoned vessels, and reestablishing more natural aquatic/riparian ecosystems.

Washington State Recreation and Conservation Office (RCO)

1111 Washington Street SE
190 PO Box 40917
Olympia, WA 98504
360-902-3000

<http://www.rco.wa.gov/grants/index.shtml>

195 RCO provides leadership, funding, and technical assistance to protect and restore habitats, invest in and track salmon health and recovery, and protect Washington's diverse biological heritage. Grant programs offered by the RCO include:

- *Aquatic Lands Enhancement Account (ALEA)* targets re-establishing the natural, self-sustaining ecological functions of the waterfront, providing or restoring public access to the water, and increasing public awareness of aquatic lands as a finite natural resource and

- 200 irreplaceable public heritage. ALEA grants may be used for the acquisition, improvement, or
protection of aquatic lands for public purposes. They also may be used to provide or
improve public access to the waterfront.
- 205 • The *Family Forest Fish Passage Program* provides funding to small forest landowners to
repair or remove fish passage barriers, such as culverts and other stream crossing structures,
which keep trout, salmon, and other fish from reaching upstream habitat. The program funds
the replacement of eligible barriers with new structures. Since 2003, nearly 285 landowners
have taken advantage of the program to remove 353 barriers and open more than 804 miles
of stream habitat.
 - 210 • The *Washington Wildlife Recreation Program* (WWRP) provides funds for the acquisition and
development of recreation and conservation lands. WWRP funds restoration projects such as
animal watering stations, bank stabilization, LWD placement, and riparian revegetation.

Washington State Department of Transportation City Fish Passage Grant Program

310 Maple Park Avenue SE

215 Olympia, WA 98501

206-386-7220

<http://www.wsdot.wa.gov/Projects/FishPassage/default.htm>

220 State highways cross streams and rivers in thousands of places in Washington. At many places, culverts
are too small or otherwise inadequate to allow fish to migrate upstream and downstream as necessary
for growth and reproduction. State law (RCW 77.57.030) requires WSDOT to install and maintain all
culverts, fishways, and bridges to provide unrestricted fish passage. WSDOT has worked for more than
two decades to improve fish passage and reconnect streams.

Appendix C – Additional Restoration Resources

C.1 Overview

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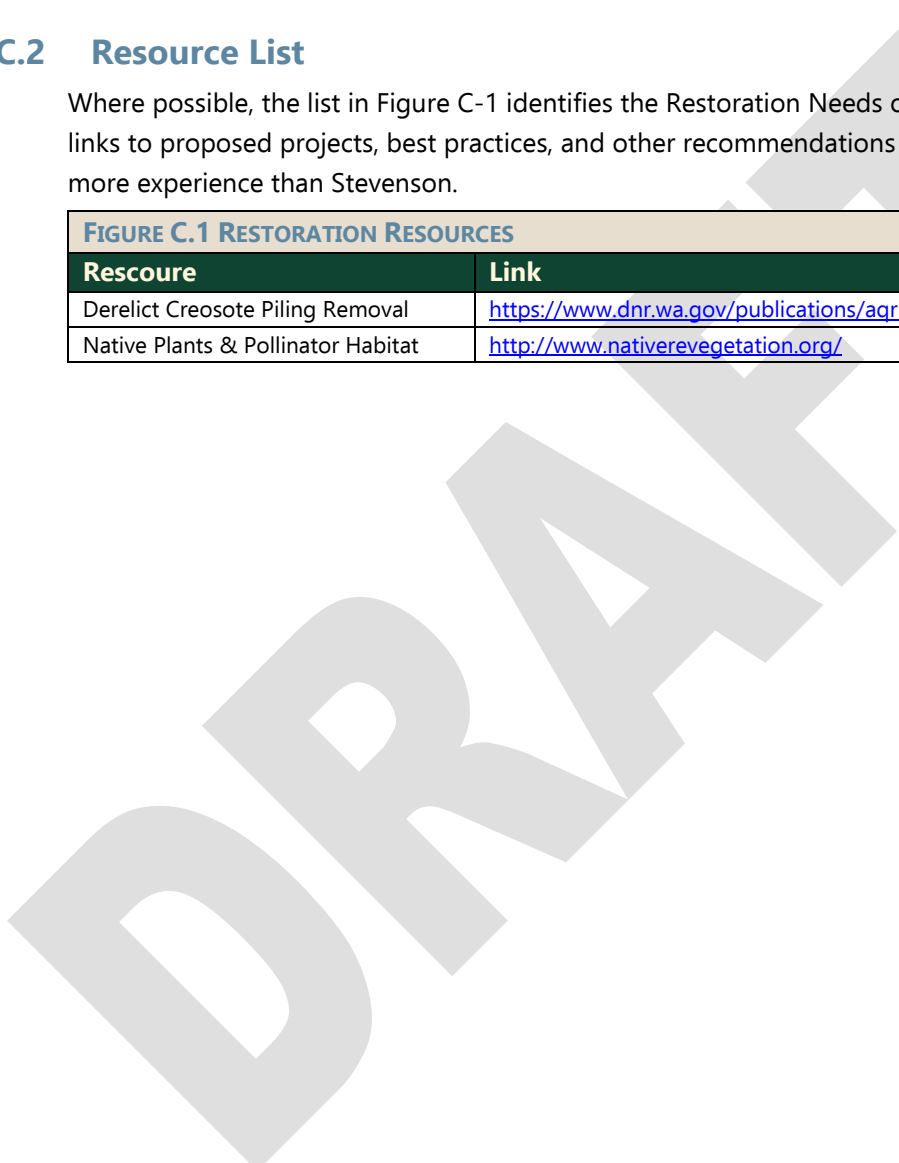
As a program, Shoreline Restoration is relatively new in Stevenson and many involved may be unfamiliar with what is necessary to implement successful projects. This appendix attempts to overcome this reality by collecting useful resources.

C.2 Resource List

Where possible, the list in Figure C-1 identifies the Restoration Needs of RP Figure 2-1 and collects links to proposed projects, best practices, and other recommendations based on communities with more experience than Stevenson.

FIGURE C.1 RESTORATION RESOURCES	
Resource	Link
Derelict Creosote Piling Removal	https://www.dnr.wa.gov/publications/aqr_rest_pileremoval_bmp_2017.pdf
Native Plants & Pollinator Habitat	http://www.nativerevegetation.org/

10



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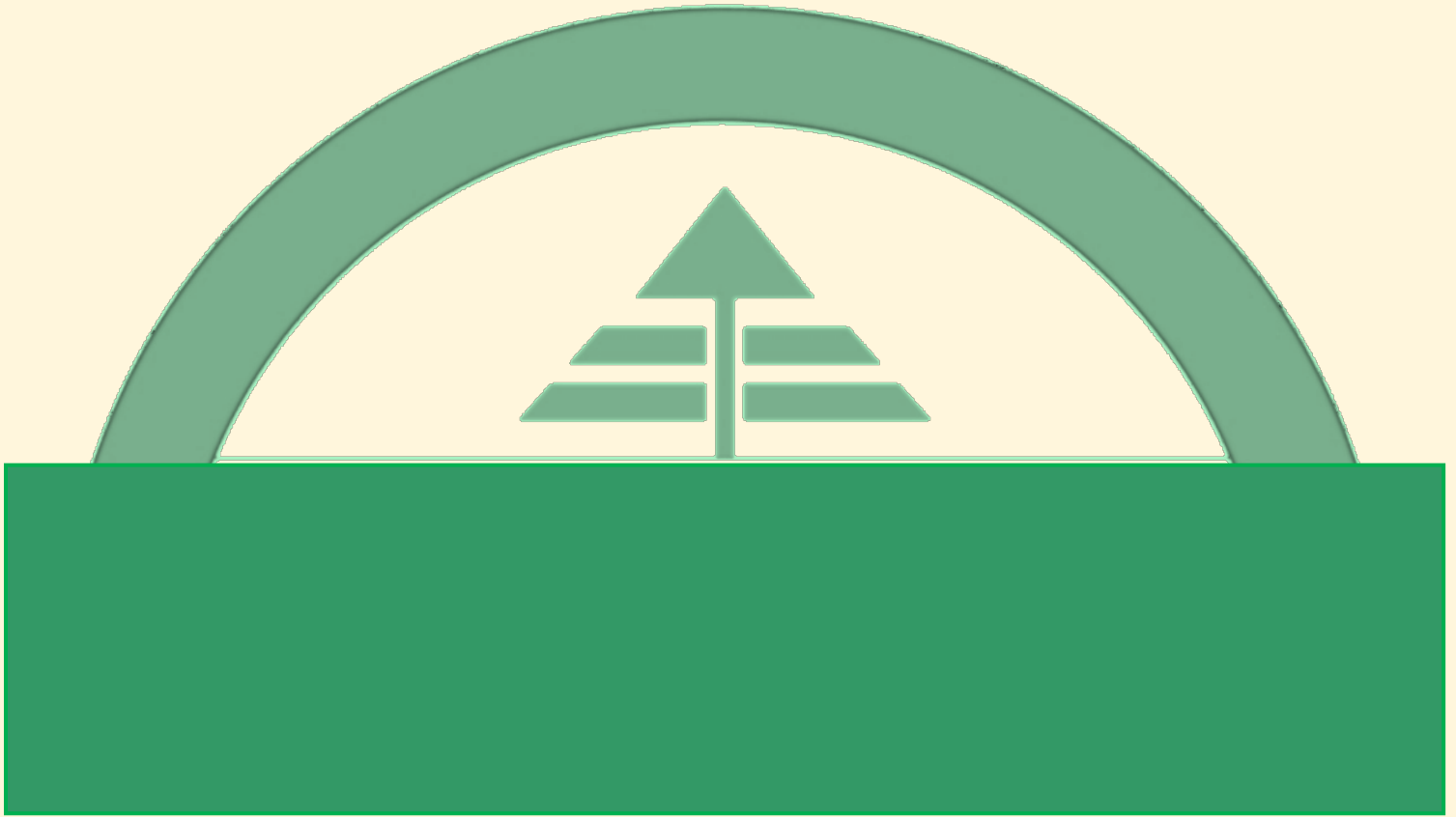


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Stevenson Planning Department
PO Box 371
Stevenson, WA 98648
www.ci.stevenson.wa.us

STEVENSON

SHORELINE MASTER PROGRAM



City of Stevenson
Second Draft Cumulative Impact Analysis
& No Net Loss Report

October 2018

Ecology Grant # G1200-044

Tasks 3.6, [4.2](#), [4.3](#)



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Executive Summary

5 This report provides a summary and analysis of the cumulative impacts that can be expected to occur over time as the City of Stevenson (City) implements its updated Shoreline Master Program (SMP) (Chapter 18.08 – Shorelines Management of the Stevenson Municipal Code). The City is updating its SMP in order to comply with the Washington State Shoreline Management Act (SMA) and the Washington Administrative Code (WAC) implementing rules (WAC 173-26, also called the Shoreline Master Program Guidelines and referred to in this report as the SMP Guidelines).

10 The City is developing an updated locally approved SMP (Draft SMP), which contains policies and regulations to protect the City's shorelines from potential negative effects caused by future development. The City is also developing a Restoration Plan (RP) to identify opportunities to improve or restore ecological functions that have been impaired as a result of past development activities. This report compares the impacts expected through Draft SMP policies to the improvements expected through the Restoration Plan. This comparison is necessary to assess whether the City's proposal is consistent with the state SMP Guidelines and the policy goals of the SMA related to no net loss of shoreline ecological functions. Early drafts of this report excluded No Net Loss from the title as an indication of the iterative review being conducted. The final report includes this title and statements related to the program's achievement of the state's no net loss standard.

15 The conclusions of this report indicate that 9 of the City's 12 indicators of ecological function will show improvement based on the Draft SMP and Restoration Plan. For the 3 indicators where decline is expected, improvements to other indicators are expected to offset the likely impacts to the underlying ecological functions through:

- 20 • Shoreline environment designations to protect or enhance the current or desired character of shorelines.
- 25 • A system of Prohibited, Conditional, and Permitted uses that provides additional controls leading to the current or desired character of shorelines.
- General policies and regulations intended to protect the shoreline functions, as well as policies designed to protect specific shoreline functions, such as water quality, water quantity, vegetation, and habitat.
- 30 • Specific vegetation conservation standards combined with use setbacks and reach-specific riparian area buffers to protect shoreline ecological functions.
- Critical areas regulations to provide protections for wetlands, fish and wildlife habitat, critical aquifer recharge areas, flood hazard areas, and geologically hazardous areas.
- Local, state, and federal regulations to ensure that shoreline impacts are avoided, minimized, and/or mitigated.
- 35 • Restoration activities and programs that are expected to improve shoreline functions. These non-regulatory enhancement and restoration activities are likely to offset or minimize potentially adverse unanticipated and/or incremental cumulative impacts within the County's shoreline jurisdiction.

40 Given the policy guidance and regulatory requirements proposed, including the implementation of the shoreline restoration plan and the key vegetation removal and setback features listed above, the

implementation of the Draft SMP is anticipated to achieve no net loss of ecological functions in the city's shorelines. Stevenson's robust vegetation standards are more specific and require greater mitigation than what most rural communities require, and account for temporal losses and the possibility of failure of mitigation efforts. In the long term, a net gain in functions is likely in many instances, because the mitigation ratios exceed 1:1 and will eventually result in larger, better functioning resources than those impacted. Additionally, monitoring and conservation covenant requirements will ensure the success of mitigation sites and their protection from future development in perpetuity. Therefore, the SMP policies and regulations will result in no net loss of ecological functions or values of shorelines.

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Chapter 1 – Introduction

1.1 Title

This document shall be known and may be cited as the Stevenson 2018 Cumulative Impacts Analysis (CIA).

1.2 Introduction

This cumulative impacts analysis supports the City of Stevenson (City) Comprehensive Shoreline Master Program (SMP) update. The City's long-standing SMP is being updated in order to comply with updates to Washington's Shoreline Management Act (SMA), the Revised Code of Washington (RCW) 90.58, and the Washington Administrative Code (WAC) 173.26 adopted in 2003 by the state legislature. The City's SMP was first adopted in June 1974 and was revised in August 1975.

This report assesses the potential cumulative impacts of shoreline development under the Draft SMP. The analysis contained in this report relies on the existing condition information provided in the City's "Final Shoreline Inventory & Characterization Report" (ICR), which evaluated ecosystem processes and included an inventory and analysis of shoreline conditions related to land use, public access, and environmentally sensitive areas and habitat. This analysis also utilizes the Inventory & Characterization Report to assess development potential based on proposed shoreline environment designations (SEDs) contained in the Draft SMP.

1.3 Purpose

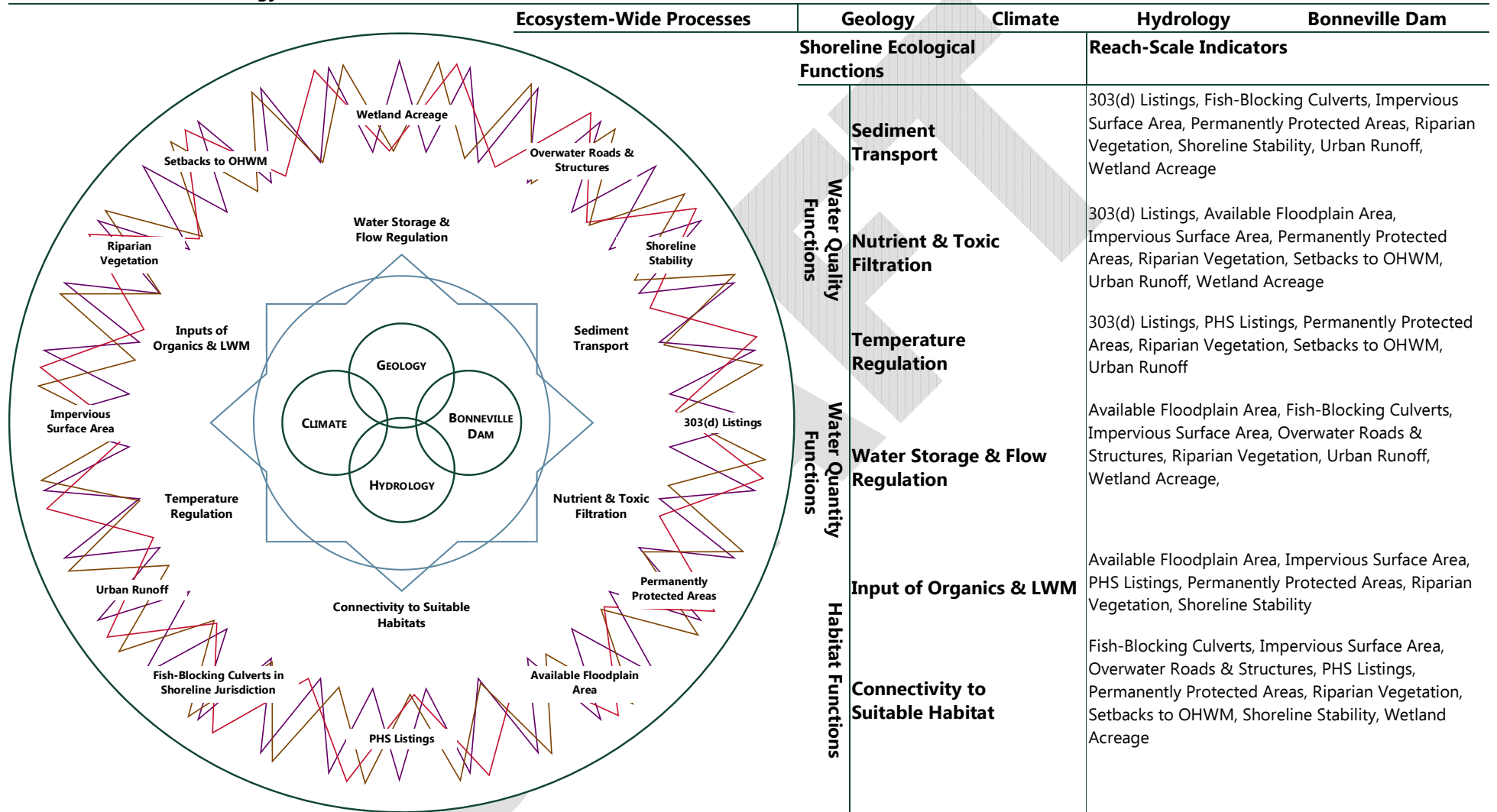
This report was generated to address the requirements for a cumulative impacts analysis that are contained in the Shoreline Master Program Guidelines (WAC 173-26; referred to in this report as the SMP Guidelines). Cumulative impact analyses are conducted while drafting SMP provisions as part of the comprehensive update process. The City is required to evaluate the cumulative impacts of "reasonably foreseeable" future development. Typically, this means full build-out for a 20-year planning horizon and the methodology below describes the development expected. This evaluation verifies that the proposed SMP's shoreline management policies and regulations are adequate to ensure "no net loss" of shoreline functions compared to "baseline" conditions. "No net loss" means that impacts may occur, but adequate measures are in place within the overall shoreline program to mitigate them such that the post development conditions are no worse overall than pre-development conditions.

The findings of this report inform decisions on SMP policies, programs, and regulations to address adverse cumulative impacts and protect shoreline ecological functions. This analysis is not proposed for inclusion as part of the Stevenson Comprehensive Plan or the development regulations of the Stevenson Municipal Code (SMC), but may serve as a useful reference during SMP implementation.

According to the SMP guidelines, the assessment of cumulative impacts occurs at both the planning stage and at the permitting stage when individual development proposals are reviewed (a site-specific effort once the SMP is adopted and implemented). The Guidelines recommend assessing the impacts of "commonly occurring and planned development" at the planning stage "without reliance on an individualized cumulative impacts analysis." In contrast, developments that have un-anticipatable impacts that cannot be reasonably identified at the time of SMP development should be evaluated via

FIGURE 1-1 STEVENSON'S ECOSYSTEM-WIDE PROCESSES, ECOLOGICAL FUNCTIONS, AND REACH-SCALE INDICATORS

Characterization Methodology



the shoreline substantial development and conditional use permit processes to ensure that there is no net loss of ecological function after mitigation (WAC 173-26-201(3)(d)(iii)).

1.4 Methodology

Although flexible, WAC 173-26 requires the use of a particular framework to evaluate the potential cumulative impacts on shoreline functions and processes that may result from activities or development under the City's proposed SMP over time. The framework includes the following factors.

- 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 or facilitative programs under other local, state and federal laws.

1.4.1 Relationship to Inventory & Characterization Report

To address the first 2 bullet points above, this analysis relies on the City's Shoreline Inventory & Characterization Report (ICR), which evaluated ecosystem-wide processes, shoreline ecological functions, and land uses within shoreline jurisdiction. To address the first bullet point, the existing condition information provided in ICR Chapter 4 is used. Figure 1-1 on the preceding page is taken from the ICR to describe how the 4 ecosystem-wide processes, 6 ecological functions, and 12 reach-scale indicators interact within the snapshot of existing conditions. In ICR Chapter 4 each of the 12 reach-scale indicators were qualitatively rated based on a 5-point scale (Figure 1-2).

FIGURE 1-2 RATING INDICATORS OF ECOLOGICAL FUNCTION

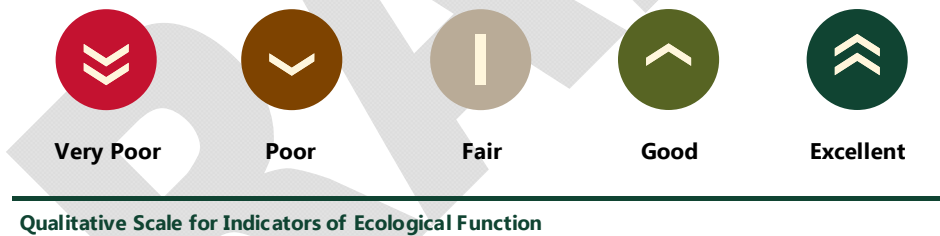


Figure Credit Ben Shumaker (2017) after Consumer Reports.

To assess the physical and biological resources of Stevenson's shorelines, the ICR broke them into 7 manageable units based on geographic location along Ashes Lake, the Columbia River, Rock Cove and Rock Creek, the only streams or lakes in the City considered part of shoreline jurisdiction. A summary of the evaluation performed in ICR Chapter 4 is included as part of CIA Figure 2-1. The ICR rating for each indicator of ecological function is included in the first row of each of these before anticipated changes are listed.

The projection of future shoreline development and use in ICR Table 5.3-1 provides the basis of analysis under the second bullet point. The potential use changes/conflicts listed in that table are included in CIA Figure 1-3, as the reasonably foreseeable future development and use of the shoreline.

1.4.2 Relationship to Restoration Plan

The third bullet point above relies on the description of restoration strategies and projects in the City's Shoreline Restoration Plan, especially Restoration Plan Figure 3-1 which identifies the shoreline reaches and shoreline ecological functions where improvements are expected based on the implementation of the actions. Each of the projects listed in that table are transferred to CIA Figure 2-6, below.

35 **FIGURE 1-3 CATEGORIES OF REASONABLY FORESEEABLE SHORELINE USE & MODIFICATION BY REACH**

Use	CR1	CR2	CR3	RC1	RC2	RCo	AL
Boating Facilities & Overwater Structures	☑	☑	☑	☑		☑	
Commercial & Industrial		☑	☑	☑	☑	☑	
Forest Practices				☑	☑		
Institutional	☑	☑		☑		☑	
Land Division			☑	☑	☑		
Recreational	☑	☑		☑	☑	☑	
Residential	☑	☑		☑	☑		
Transportation & Parking Facilities	☑	☑	☑	☑		☑	☑
Utilities		☑	☑	☑	☑	☑	☑
Modifications							
Vegetation Removal	☑	☑	☑	☑	☑	☑	☑
Fill		☑	☑	☑		☑	
Shoreline Stabilization		☑		☑	☑	☑	
Shoreline Restoration	☑	☑	☑	☑	☑	☑	
Dredging		☑	☑	☑		☑	
Breakwaters, Jetties, Groins & Weirs		☑	☑	☑	☑		

1.4.3 Impacts Analysis

In order to analyze the impacts of reasonably foreseeable shoreline development, use, and restoration, an assessment of development types and projects has been performed. This assessment rates how each interacts with the 12 indicators of shoreline ecological functions. The degree to which any specific project degrades or improves the indicators of shoreline ecological functions is qualitative and based on several factors, including proximity, duration and scale of the project or the project’s impacts. The anticipated changes to the indicators of ecological functions are represented using another 5-point rating system (Figure 1-4) that ranges from Much Worse to Much Better.

40
 45 **FIGURE 1-4 RATING PROJECTED CHANGES TO INDICATORS**

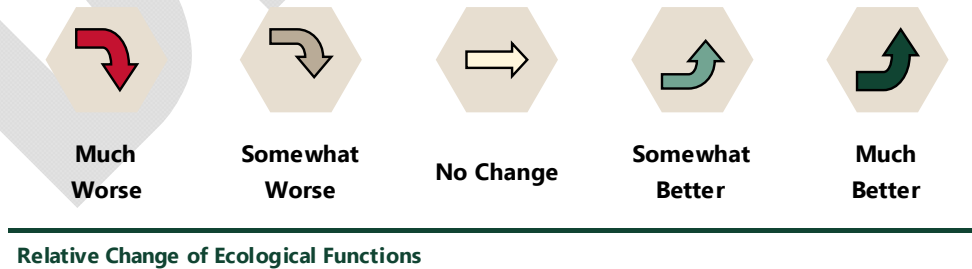


Figure Credit: Ben Shumaker (2018)

Chapter 2 – Impacts Analysis

The state SMP guidelines require that Shoreline Environment Designations be assigned to shoreline areas according to their function, existing land uses, and the goals and aspirations of the community. For those unfamiliar with the Shoreline Management Act (SMA), a Shoreline Environment Designation (SED) is similar to the concept of a zoning district. Consistent with the City’s requirements under the SMA, SMP Chapter 3 provides a system of SEDs which reflect those outlined in the SMP guidelines and apply in addition to other city zoning district requirements. The locations of the City’s SEDs are ~~described in and~~ depicted on the map of shoreline jurisdiction and environment designations in SMP Appendix A.

2.1 Reasonably Foreseeable Development Activities

Together SMP Table 5.1 and SMP Table 6.1 list 17 high-level categories of shoreline use and modification. These high-level categories are then separated by water-orientation and other specific types of development activities warranting regulatory consideration. In total at least 53 individual types of shoreline uses and modifications are specifically regulated in the SMP. Of these, 42 (from 16 of the high-level categories) either 1) currently exist, 2) are referenced in ICR Table 5.3-1 or 3) are reasonably foreseeable as associated with existing or anticipated uses. The high-level categories are listed in CIA Figure 1-3. Their impacts and the protective provisions of the SMP are analyzed in CIA Section 2.2, below.

FIGURE 2-1 SUMMARY OF PROJECTED INDICATOR CHANGES

	PHYSICAL ENVIRONMENT			BIOLOGICAL ENVIRONMENT				ALTERED CONDITIONS				
	Available Floodplain Area	Riparian Vegetation	Shoreline Stability	Fish-Blocking Culverts	Permanently Protected Areas	PHS Listings	Wetland Acreage	303(d) Listings	Impervious Surface Area	Overwater Roads & Structures	Setbacks to OHWM	Urban Runoff
Columbia River Reach 1 (Predesignated)												
Changes anticipated in 2.2.2												
Changes anticipated in 2.2.3												
Changes anticipated in 2.2.4												
Changes anticipated in 2.3												
Changes anticipated in 2.4												
Columbia River Reach 2												
Changes anticipated in 2.2.2												
Changes anticipated in 2.2.3												
Changes anticipated in 2.2.4												

Changes anticipated in 2.3

Changes anticipated in 2.4

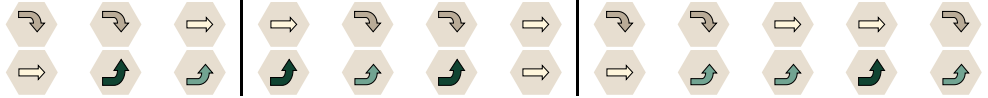


Figure 2-1 Summary of Projected Indicator Changes, cont.

	PHYSICAL ENVIRONMENT			BIOLOGICAL ENVIRONMENT				ALTERED CONDITIONS				
	Available Floodplain Area	Riparian Vegetation	Shoreline Stability	Fish-Blocking Culverts	Permanently Protected Areas	PHS Listings	Wetland Acreage	303(d) Listings	Impervious Surface Area	Overwater Roads & Structures	Setbacks to OHWM	Urban Runoff
Columbia River Reach 3 (Predesignated)	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.2.2	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.2.3	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.2.4	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.3	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.4	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Rock Creek Reach 1	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.2.2	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.2.3	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.2.4	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.3	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.4	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Rock Creek Reach 2 (Predesignated)	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.2.2	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.2.3	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.2.4	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.3	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.4	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Rock Cove	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.2.2	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.2.3	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.2.4	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡
Changes anticipated in 2.3	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡	➡

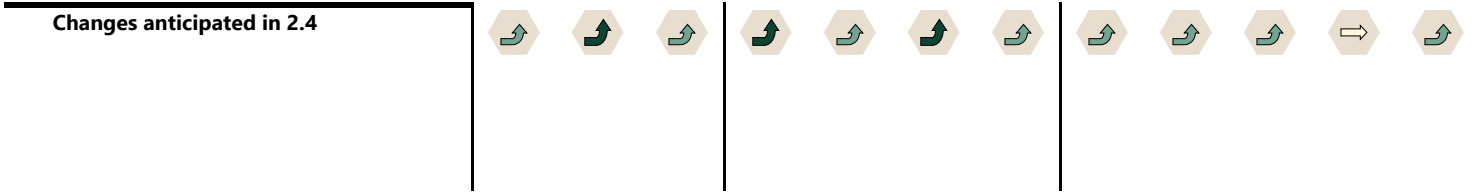
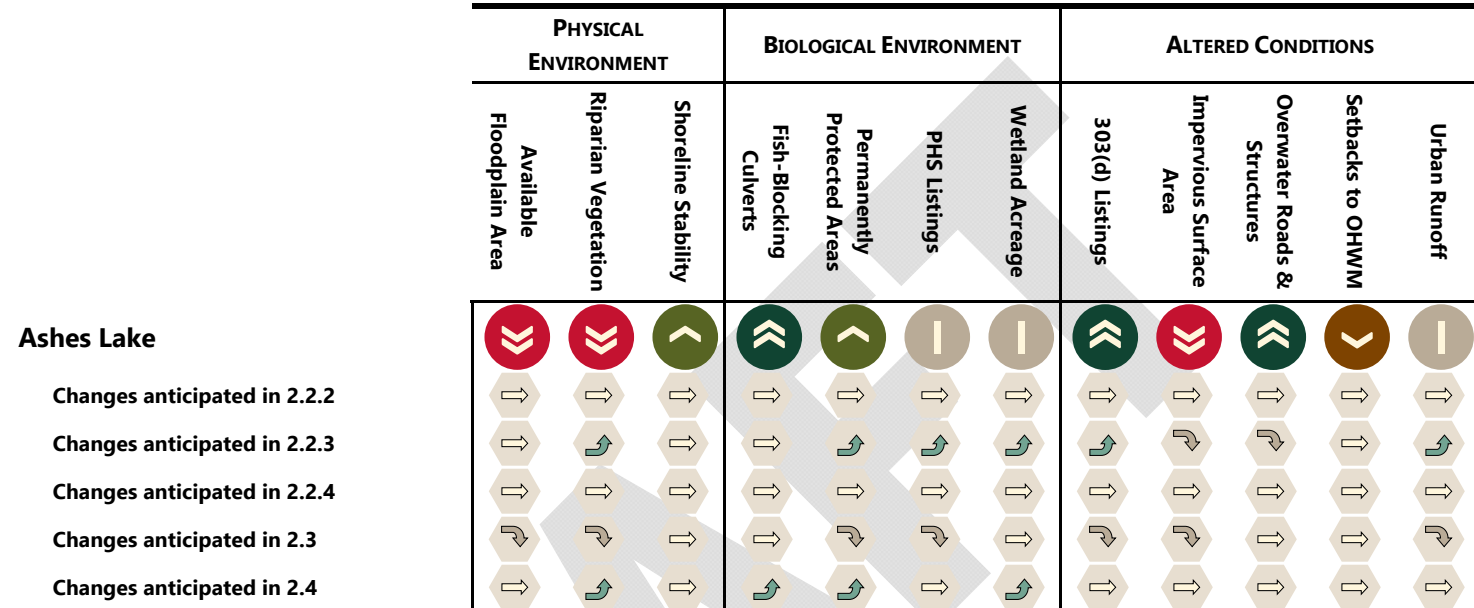


Figure 2-1 Summary of Projected Indicator Changes, cont.



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2.2 Shoreline Development and Protective Provisions

The protective provisions of the SMP primarily rely on several types of regulatory tools, including: Shoreline Environment Designations (SEDs), required setbacks from the OHWM, regulations that are applicable to all uses (including No Net Loss Standards), and regulations applicable to specific uses.

When working in concert, CIA Figure 2-1 summarizes the effects these protective provisions are expected produce on the ICR's 12 indicators of ecological function at the reach scale.

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2.2.1 Shoreline Environment Designation Use Allowances

FIGURE 2-2 DISTRIBUTION OF SHORELINE ENVIRONMENT DESIGNATIONS

Location	Natural	Shoreline Residential	Urban Conservancy	Active Waterfront	TOTAL
City Jurisdiction	17 ac 17%				97 ac
Predesignated Area					86 ac
TOTAL					183 ac

*Total acreage in this table differs from the ICR, which considered the Piper Road Landslide Area as part of the preliminary shoreline jurisdiction.

30 The types of development allowed on Stevenson’s shorelines will vary subject to the SED assigned to
 each shore segment. In order to guide development appropriately, Ecology’s SMP Guidelines require
 that SEDs be assigned to shoreline areas according to their ecological function, existing land uses, and
 the goals and aspirations of the community. These designations will help protect ecological functions
 and values and accommodate preferred and water-dependent shoreline uses. Stevenson’s SMP
 35 proposes 5 SEDs, listed in order from most protective to most permissive: Aquatic, Natural, Shoreline
 Residential, Urban Conservancy, Active Waterfront. The approximate acreage of the non-Aquatic SEDs
 is included in Figure 2-2, below.

40 SMP Table 5.1 lists common shoreline uses and whether they are prohibited, are allowed, or may be
 conditionally allowed. CIA Figure 2-3, below summarizes the relative restrictiveness/permissiveness of
 each SED. An analysis of the impacts of reasonably foreseeable development based on these
 allowances is conducted in greater detail in CIA Section 2.2.3.

FIGURE 2-3 SHORELINE ENVIRONMENT DESIGNATION USE & MODIFICATION ALLOWANCES

Aquatic*	Natural	Shoreline Residential	Urban Conservancy	Active Waterfront
20 Prohibited	28 Prohibited	12 Prohibited	5 Prohibited	5 Prohibited
10 Conditional	17 Conditional	24 Conditional	19 Conditional	14 Conditional
3 Permitted	8 Permitted	17 Permitted	29 Permitted	34 Permitted

*The Aquatic SED contains 20 fewer categories were allowances for Boating Facilities & Overwater Structures and Shoreline Modifications are determined by upland SED.

Columbia River Reach 1 – Predesignated East Urban Area

45 Most foreseeable development in the CR1, could allowed by obtaining a Shoreline Conditional Use
 Permit. In addition to satisfying the other protective provisions of the Draft SMP, the conditional use
 criteria of SMP Section 2.7.1 require heightened analysis of proposal’ effects to the environment and
 the overall public interest. Key conditional uses listed for the Shoreline Residential and Urban
 Conservancy SEDs that dominate this reach include the most impactful Boating and Transportation
 50 facilities. Reasonably foreseeable development that would be allowed in this reach without a
 conditional use permit include most Recreational and Residential uses and Boating and Transportation
 facilities where lesser impacts are anticipated. Impacts to specific indicators of ecological function
 related to reasonably foreseeable development are dealt with in greater detail in CIA Section 2.2.3,
 below.

Columbia River Reach 2 – Downtown Waterfront

55 The CR2 Reach is dominated by the Active Waterfront SED and includes a small section of Shoreline
 Residential. Key conditional use protections for foreseeable development in the Active Waterfront SED
 are primarily related to non-water-oriented development. See also CIA Section 2.2.3.

Columbia River Reach 3 – Predesignated West Urban Area

60 Similar impacts are expected in the CR3 reach where the Active Waterfront SED is the primary
 designation proposed.

Rock Creek Reach 1 – City Reach

The RC1 reach includes all 4 land-based SEDs and the full range of reasonably foreseeable development types are expected in this reach. An analysis of impacts from the conditional and permitted uses related to this reach must rely on CIA Section 2.2.3.

Rock Creek Reach 2 – Predesignated County Reach

The primary SED's applied to the RC2 reach are Natural and Shoreline Residential. Key protections for reasonably foreseeable development in the Natural SED of this reach include prohibitions against Commercial & Industrial, Residential and most Institutional uses. Where Transportation and Utility uses are not prohibited, they are listed as conditional uses. In the Shoreline Residential, conditional use protections involve limited allowances for Water-Oriented Commercial, Transportation and Utility uses. The impacts of the permitted Residential and Recreational uses are dealt with in CIA Section 2.2.3.

Rock Cove Reach

The impacts from reasonably foreseeable development in the Urban Conservancy and Active Waterfront SEDs of the RCo reach are similar to those anticipated in CR2. This reach also notably includes the Natural SED's application to the islands of Rock Cove where conditional use protections will control much of the Boating Facilities and Institutional uses that may be proposed. The impacts of the permitted Recreational uses are dealt with in CIA Section 2.2.3, below.

Ashes Lake Reach – Predesignated

Reasonably foreseeable development in this reach is limited to maintenance of existing Transportation and Utility uses and is dealt with in CIA Section 2.3, below.

2.2.2 Shoreline Setbacks

Setbacks to OHWM and Overwater Roads & Structures are the primary indicators of ecological function directly affected by the use of SEDs and the only indicators where the indicator is expected to become Better or Worse. Setbacks from the OHWM are also displayed in SMP Table 5.1. Riparian Vegetation, Permanently Protected Areas, PHS Listings, and Impervious Surface Area are indicators that might become Somewhat Better or Worse based on the SED-specific setbacks.

Columbia River Reach 1 – Predesignated East Urban Area

For Reach CR1, the Shoreline Residential and Urban Conservancy SED will apply to most foreseeable development. The 50 ft setback required for residential, cemetery, water-related recreational and roads in these SEDs is likely to increase the overall mean (39 ft) and median (24 ft) setbacks for structures in that area. As a result, ecological functions based on this indicator can be expected to be Somewhat Better if developed under the City's proposed SMP. However, because these provisions are not likely to affect existing development, the 5 related indicators could be expected to get Somewhat Worse in this reach if setbacks were the only protective provision applied.

Columbia River Reach 2 – Downtown Waterfront

In Reach CR2, the allowed setbacks for reasonably foreseeable development in the proposed Shoreline Residential and Active Waterfront designations are much closer than the current mean (98 ft) and median (87 ft) setbacks for existing structures. Implementation of the SMP according to the proposed SEDs is expected to make this indicator Much Worse. Riparian Vegetation in this reach is already Very Degraded, and the designation of SEDs will likely result in No Change to the degree of degradation of the reach. The remaining 4 indicators for this reach could be expected to get Somewhat Worse.

Columbia River Reach 3 – Predesignated West Urban Area

105 In Reach CR3, the Urban Conservancy and Active Waterfront designations' allowed setbacks for
foreseeable development would be greater than the mean (24 ft) and median (15 ft) setback for
existing structures in the reach and make this indicator Much Better. Allowances for development of
110 replacement bridges in the Urban Conservancy designation is likely to make the Overwater Roads &
Structures indicator Somewhat Better. Similar to CR2, the lack of existing shoreline vegetation is a
factor in determining that there would be No Change in the Riparian Vegetation indicator under this
proposal. The remaining 3 indicators would likely become Somewhat Worse in this reach.

Rock Creek Reach 1 – City Reach

115 In Reach RC1, the allowed setbacks in the Urban Conservancy and Active Waterfront and Shoreline
Residential designations will likely decrease the mean (88 ft) and median (77 ft) existing setbacks for
structures. As a result, this indicator will become Somewhat Worse based on reasonably foreseeable
development. Allowances for development of replacement bridges in the Urban Conservancy
120 designation is likely to make the Overwater Roads & Structures indicator Somewhat Better. The 4 other
indicators related to SEDs would likely become Somewhat Worse.

Rock Creek Reach 2 – Predesignated County Reach

120 Except for the changes related to Overwater Roads & Structures, anticipated impacts in Reach RC2, are
similar in all ways to RC1. Mean (95 ft) and median (89 ft) existing setbacks would likely decrease based
on residential setback requirements of the Shoreline Residential SED. All related indicators would likely
become Somewhat Worse.

Rock Cove Reach

125 In Reach RCo, the allowed setbacks for reasonably foreseeable development in the proposed Urban
Conservancy and Active Waterfront designation are much closer than the current mean (88 ft) and
median (92 ft) setbacks for existing structures. Implementation of the SMP according to the proposed
SEDs is expected to make this indicator Much Worse. The remaining 5 indicators for this reach could be
130 expected to get Somewhat Worse if SEDs and setbacks are the only protections considered.











Ashes Lake Reach – Predesignated











130 In Reach AL, the Natural and Urban Conservancy designations and the limited reasonably foreseeable
development will likely result in No Change to any indicator of ecological function.

Recommendations

- 135 • Do not rely on Shoreline Environment Designation management policies and setback
requirements as the sole controls for impacts to Riparian Vegetation, Permanently Protected
Areas, PHS Listings, Impervious Surface Area, or Overwater Roads & Structures.

FIGURE 2-4 DEVELOPMENT IMPACTS & REGULATORY CONTROLS

Development Activity & Associated Uses	Uncontrolled Impact of Development	Proposed Development Controls	Anticipated Net Effect/ Recommendations
<p>Construction, Generally</p> <p>Description: This category of impacts is among the most noticeable and includes the construction materials (such as windows, construction practices (such as fill, grading, and machinery) and the buildings and structures that result.</p> <p>Associated Uses: All.</p> <p>Reach Affected: CR1, CR2, CR3, RC1, RC2, RCo</p>	<p>Ground disturbance during fill and grading activities can result in dust and excess sediment in runoff waters.</p> <p>Machinery used during construction can both destabilize soils and result in their compaction. These impacts are similar, though less severe, as those discussed under impervious surfaces. The leaks and noise associated with machinery can degrade water quality and disturb nesting and rearing of sensitive species.</p> <p>If sited inappropriately or constructed using inappropriate materials for their setting, inwater and overwater structures can destabilize shorelines and leach pollutants which degrade water quality. Streamside windows and outdoor lighting can lead to glare that disturbs the nesting and rearing habitats of some birds, disrupts salmon migration and feeding, and interferes with other shoreline species.</p> <p>Fill, buildings, and structures in floodways and floodplains reduce the overall capacity of the system to carry water and can alter natural channel migration practices. These actions also supplant and reduce the suitability of habitat, including priority habitats and species and wetlands.</p> <p>The linear nature of fences, roads and utility corridors can affect wildlife movement and survival. Roads and their culverts create major barriers for terrestrial, amphibious and aquatic species and increase mortality all species. Overhead utilities can increase bird and bat strikes and affect their mortality.</p>	<p>SMP Section 6.4.2 deals specifically to fill as a shoreline modification. This section applies to fill that "raises the elevation or creates dry land". All proposals for fill require minimization and avoidance of ecological impacts. In upland areas, fill is subject to the setbacks and procedures of the allowed use or modification it supports. In more sensitive areas, fill activities are limited to those that support specific scenarios and/or priority uses.</p> <p>SMP Sections 5.4.3 and 5.4.8 include siting and construction provisions relating to the avoidance of ecological impacts.</p> <p>SMP Section 4.6.3-6 applies to all construction materials coming in contact with water and requires use of suitable and certified materials. SMP Section 5.4.3-3.c reiterates and strengthens this for boating facilities & overwater structures.</p> <p>SMP Section 4.4.5 deals with development in flood hazard areas where the existing regulations of SMC 15.24 continue to apply. The SMP places additional limits on structural flood hazard reduction measures and requires additional analysis and certification for development in channel migration zones.</p> <p>SMP Section 5.4.11 avoiding new transportation and parking facilities in shorelines and sharing them in order to reduce impacts from redundant uses. Similarly SMP Section 5.4.12 requires utility lines to cross shorelines in the least impactful manner, be placed underground, and collocated on bridges or other structures.</p> <p>See also, CIA Section 2.2.1 Shoreline Environment Designations Use Allowances, CIA Section 2.2.2 Shoreline Setbacks, CIA Section 2.2.4 No Net Loss Protections, and SMC 15.24 Floodplain Management Regulations.</p>	<p> Indicators Projected to be Much Better: None</p> <p> Indicators Projected to be Somewhat Better: 303(d) Listings, Permanently Protected Areas</p> <p> Indicators where No Change is Projected: Available Floodplain Area, Shoreline Stability, Fish Blocking Culverts, Wetland Acreage, Urban Runoff</p> <p> Indicators Projected to be Somewhat Worse: Riparian Vegetation, PHS Listings, Impervious Surface Area, Overwater Roads & Structures, Setbacks to OHWM</p> <p> Indicators Projected to be Much Worse: None</p> <p>Recommendations:</p> <ul style="list-style-type: none"> -Do not rely on development controls as the only protection from impacts to indicators of ecological function. -Maintain access to a list of materials certified for contact with water. -Consider adding requirements for machinery leak and spill prevention and remediation. -Consider adding Construction as a type of shoreline modification. -Better reference existing City, State, and federal requirements for temporary erosion and sediment control plans and BMPs at SMP Sections 6.4.2.
<p>Impervious Surfaces & Stormwater</p> <p>Description: Impervious surfaces include rooftops, paved areas, and compacted gravels and soils, prevent precipitation from infiltrating into the ground where it falls, and create stormwater runoff.</p> <p>Associated Uses: Boating Facilities & Overwater Structures, Commercial & Industrial, Institutional, Recreational, Residential, Transportation & Parking, Fill, Shoreline Stabilization.</p>	<p>Stormwater runoff can have significant negative impacts to shorelines and the ecological health of a watershed. During rain events, large volumes of stormwater runoff can be carried to waterbodies and cause flooding and erosion and wash away habitats.</p> <p>Stormwater runoff can pick up pollutants commonly found on impervious surfaces, including sediment, oil and grease, trash, and pesticides and carry them to waterways or into the groundwater. The deposition of sediments can decrease fish passage and reduce viability of habitat areas and wetlands.</p> <p>As the amount of impervious surfaces increases in a watershed, the likelihood of sufficient groundwater recharge and hyporheic transfer decreases, a greater volume of stormwater runoff is generated, and a higher potential of watershed and water quality degradation exists.</p> <p>The treatment of stormwater can impact shoreline ecological functions. If not located below the OHWM, stormwater outfalls may lead to scouring. If improperly designed or constructed, new outfalls and modifications to existing outfalls could impact existing native riparian vegetation or aquatic vegetation attached to, or rooted in, the substrate.</p> <p>In river and stream shorelines, stormwater outfall structures may require permanent bank hardening to prevent failure of the outfall structure or erosion of the shoreline.</p>	<p>SMP Section 4.7 applies to all regulated activities that "affect the water quality or quantity of Stevenson shorelines". This section requires compliance with all existing City, State, and federal stormwater laws, including the Stormwater Management Manual for Western Washington. Stormwater facilities must adhere to the setback provisions of SMP Table 5.1 and discussed in CIA 2.2.2. Existing septic systems that fail are required to connect to sewer if feasible. New septic systems for "any new development, business, or multifamily unit" are not allowed where sewer is available.</p> <p>See also, CIA Sections 2.2.1 Shoreline Environment Designation Use Allowances, 2.2.2 Shoreline Setbacks, and 2.2.4 No Net Loss Protections.</p>	<p> Indicators Projected to be Much Better: None</p> <p> Indicators Projected to be Somewhat Better: 303(d) Listings, Urban Runoff, Wetland Acreage</p> <p> Indicators where No Change is Projected: Available Floodplain Area, Impervious Surface Area, Permanently Protected Areas, Shoreline Stability, Fish Blocking Culverts, Overwater Roads & Structures</p> <p> Indicators Projected to be Somewhat Worse: Riparian Vegetation, Permanently Protected Areas, PHS Listings, Setbacks to OHWM</p> <p> Indicators Projected to be Much Worse: None</p> <p>Recommendations:</p> <ul style="list-style-type: none"> -Reference the Stormwater Management Manual for Western Washington (SMMWW) sooner in SMP Section 4.7.3. -Consider removing Use-specific references to the SMMWW. - Consider development incentives for projects incorporating highly desirable low impact development strategies.

<p>Reach Affected: CR1, CR2, CR3, RC1, RC2, RCo</p>			<p>-Consider clarifying the specific shoreline uses and developments where sewer connection is required.</p>
<p>Normal Usage</p> <p>Description: Though sometimes unintentional, incremental impacts from day-to-day use, maintenance practices, and ancillary usage of shoreline areas can have the most persistent and largest effect on shorelines.</p> <p>Associated Uses: Boating Facilities & Overwater Structures, Commercial & Industrial, Institutional, Recreational, Residential, Transportation & Parking, Fill, Shoreline Stabilization.</p> <p>Reach Affected: All</p>	<p>Noise and light can disrupt salmon migration and feeding, disturb the nesting and rearing habitats of some birds, and interfere with other shoreline species.</p> <p>The spread of invasive and non-native species often accompanies normal use through deliberate planting and inadvertent seeding. These species can interfere with the native plant and animal species that are adapted to Stevenson particular ecological setting. When fertilizers, pesticides, herbicides and other chemical lawn/garden treatments are used for these species it can degrade water quality and health of native species and habitats in shoreline areas.</p> <p>Turbidity and erosion can increase as a result of boating and heightened wave action, propeller scour, and the launching nonmotorized watercraft. The increased sediment in the water can disrupt salmon migration and feeding areas, and, where contamination previously existed in those sediments, water quality can be degraded anew.</p> <p>Trash, trampling, pets, solid waste, compost, and increased foot- and vehicular-traffic results from human presence in shoreline areas. This can increase the incidents of conflict between humans and wildlife, concentrate scavengers and predators, disturb the nesting and rearing habitat of some birds, reduce air and water quality, and prevent stormwater infiltration through compacted soils.</p>	<p>Application of pesticides, fertilizer and other chemicals is included within the definition of regulated activities. When applied to recreational uses, these chemicals must not directly drain or runoff into surface waters.</p> <p>The location of boating facilities must be chosen or developed in a way that considers turbidity- and erosion-related impacts.</p> <p>The Critical Areas protections of SMP Section 4.4 are applicable to all properties and will prevent impacts to those 5 state-mandated areas.</p> <p>The use-specific protective provisions of SMP Section 5.4 require site plan reviews, impervious surface limitations, and other protections that will limit impacts under this category.</p> <p>See also, CIA Sections 2.2.1 Shoreline Environment Designation Use Allowances, 2.2.2 Shoreline Setbacks, and 2.2.4 No Net Loss Protections.</p>	<p> Indicators Projected to be Much Better: None</p> <p> Indicators Projected to be Somewhat Better: 303(d) Listings, Urban Runoff</p> <p> Indicators where No Change is Projected: Available Floodplain Area, Permanently Protected Areas, Shoreline Stability, Fish Blocking Culverts, Overwater Roads & Structures</p> <p> Indicators Projected to be Somewhat Worse: Riparian Vegetation, , Impervious Surface Area, PHS Listings, Setbacks to OHWM, Wetland Acreage</p> <p> Indicators Projected to be Much Worse: None</p> <p>Recommendations:</p> <p>-Consider protective controls for pesticides, fertilizers, and other chemicals associated to a broader list of shoreline uses.</p>
<p>Vegetation Removal</p> <p>Description: Shoreline vegetation is a key component of the ecosystem, and its removal includes clearing, pruning, chemical control, and forestry practices.</p> <p>Associated Uses: All.</p> <p>Reach Affected: All</p>	<p>The removal of shoreline vegetation reduces terrestrial food supply, shade and large woody material (LWM) recruitment potential and other organic inputs which provide important habitat and food web support functions. When removed through chemical treatment, there is an effect on water quality and habitat health for other species.</p> <p>Vegetation reduction warms the water, decreases in-stream and riparian habitat complexity, and decreases protection from overhead predators.</p> <p>Habitat become more fragmented and wildlife travel corridors become limited.</p> <p>The loss of bank vegetation can result in channel widening and affect sediment supply, which in turn affects the floodplain—needed for habitat and high flow attenuation—and the stability of the shoreline.</p> <p>Shoreline vegetation also plays a role in trapping and removing sediments, nutrients and other pollutants, so the loss of vegetation can also have adverse effects on water quality. Failure to maintain vegetation or plant vegetation after site disturbance can lead to increased incidence of nonnative, invasive species. When this occurs along bluffs it can decrease root strength, create unstable slopes, and increase the likelihood of future landslides.</p>	<p>While Vegetation Removal is permitted in all shoreline environment designations, SMP Section 6.4.1 provides specific policies and regulation that prioritize avoidance and protection prior to removal.</p> <p>All types of vegetation removal must be mitigated according to SMP Table 6.2, which requires more mitigation for high priority native species and locations closer to the OHWM. Mitigation ratios range from 1:1 to 3:1 and require planting of 2 trees and 5 shrubs per 400 sq ft. Mitigation areas must be monitored for 5 years and contingency planting is required.</p> <p>Specific regulations facilitate removal of noxious aquatic and terrestrial weeds while protecting against degradation of other ecological functions.</p>	<p> Indicators Projected to be Much Better: Riparian Vegetation, Permanently Protected Areas, PHS Listings</p> <p> Indicators Projected to be Somewhat Better: 303(d) Listings, Wetland Acreage</p> <p> Indicators where No Change is Projected: Available Floodplain Area, Shoreline Stability, Fish Blocking Culverts, Impervious Surface Area, Overwater Roads & Structures, Setbacks to OHWM, Urban Runoff</p> <p> Indicators Projected to be Somewhat Worse: None.</p> <p> Indicators Projected to be Much Worse: None</p> <p>Recommendations:</p> <p>-Consider adding a stronger requirement for conservation covenants related to Habitat Conservation Areas and better connecting it with the Vegetation Removal Mitigation requirements of SMP Table 6.2 and SMP Section 6.4.1.</p>

- Consider increasing setbacks for reasonably foreseeable development in the Urban Conservancy, Active Waterfront and Shoreline Residential SEDs.
- Consider where additional Natural SEDs could be applied instead of Shoreline Residential, Urban Conservancy, and/or Active Waterfront.

5 **2.2.3 *Impacts of Regulated Activities***

Many types of shoreline use and modification involve the same development activities. This analysis relies on the descriptions in Figure 2-4 below to evaluate the impacts of reasonably foreseeable development. These descriptions include analyses of 1) the uncontrolled impacts of development activities, 2) the reasonably foreseeable uses associated with the development activities, 3) the proposed regulatory controls of the Draft SMP, and 4) the expected effects of the impact controls.

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2.2.4 *No Net Loss Protections*

Where the development controls described above can allow loss of shoreline ecological functions if implemented alone, the Environmental Protection & No Net Loss provisions of SMP Section 4.3 fill the gap to ensure new regulated activities do not result in a loss of ecological function. Like all provisions in SMP Chapter 4, these protections apply to all uses and require a Mitigation Sequence to Avoid, Minimize, Rectify, Reduce over time, Compensate, and Monitor impacts to ecological functions. Furthermore, this section requires new regulated activities to consider cumulative impacts of other reasonably foreseeable development affecting the same shoreline.

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Projected Changes to Indicators

On their own, the provisions of SMP Section 4.3 will prevent overall loss or degradation of ecological functions at the project level, however, they will ensure that each regulated project does not degrade ecological functions. This will effectively prevent any of the potential negative impacts on ecological functions identified in CIA Sections 2.2.1 through and 2.2.3. does not occur, however, The No Net Loss provisions of SMP Section 4.3 do not alter the SMP's improvement of ecological functions are any other beneficial effects identified above.

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Recommendations

The No Net Loss section places the burden of proof on the proponent that ecological functions will not be lost based on their proposal. The recommendations included in CIA Section 2.2.1 and Figure 2-4 may be an effective way reduce that burden for the proponent. Alternatively, if any other part of this program is determined to cause net loss of ecological function, those recommendations may be helpful remedies.

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2.3 *Impacts of Exempt and Unregulated Activities*

As a small and slow growing community, the biggest losses of shoreline ecological functions are expected to occur as a result of existing shoreline development and development that is outside of shoreline jurisdiction or otherwise exempt under the SMP. These impacts are expected in much the same way that impacts from normal usage are considered in CIA Figure 2-4. However, impacts anticipated from this category must rely on existing programs for their control.






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There are several local, state, and federal regulations implemented by a variety of agencies that may provide beneficial effects for both development and protection within and affecting Stevenson's shoreline jurisdiction. An incomplete list of such programs is included in ICR Section 1.3. As a result of

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implementation of these programs some of the preventative effects of SMP regulations will also be realized. Some additional degradation, however, is also expected as displayed in CIA Figure 2-5.

FIGURE 2-5 ECOLOGICAL IMPACTS OF EXEMPT AND UNREGULATED ACTIVITIES

 Much Worse	 Somewhat Worse	 No Change	 Somewhat Better	 Much Better
None	Available Floodplain Area, Riparian Vegetation, Permanently Protected Areas, PHS Listings, 303(d) Listings, Impervious Surface Area, Urban Runoff	Shoreline Stability, Fish-Blocking Culverts, Wetland Acreage, Overwater Roads & Structures Setbacks to OHWM,	None	None

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Recommendations

- Encourage coordination with other local, state, and federal authorities related to review of projects that are either exempt from shoreline compliance or outside of shoreline jurisdiction.
- Encourage retrofitting existing stormwater collection and treatment located outside of shoreline jurisdiction to improve water quantity and quality expectations before it reaches the shoreline.
- Consider enhancement projects for riparian corridors outside of shoreline jurisdiction.

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2.4 Impacts of Restoration Activities

While detrimental impacts are the primary concern of the preceding sections, the Shoreline Restoration Plan (RP) focuses on actions that can be taken to benefit ecological functions in shoreline areas. Figure 2-6, details the reach-level impacts expected by implementation of the Shoreline Restoration Plan.

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FIGURE 2-6 ECOLOGICAL IMPACTS OF RESTORATION PLAN

Shoreline Reach	Impact Narrative	Projected Indicator Changes											
		Available Floodplain Area	Riparian Vegetation	Shoreline Stability	Fish-Blocking Culverts	Permanently Protected Areas	PHS Listings	Wetland Acreage	303(d) Listings	Impervious Surface Areas	Overwater Roads & Structures	Setbacks to OHWM	Urban Runoff
All Reaches	Some level of improvement in indicators is expected based on the following general projects: R.0 – Identifying that future restoration projects are likely but have not been identified will improve the effectiveness of the Restoration Plan in all reaches. R.10 – Identifying restoration partners will improve the implementation of restoration projects in all reaches. R.11 – Implementing the CAO is dealt with in CIA Section 2.3, above. R.12 – Promoting statewide improvements in the regulation of wetlands will ensure impacts are avoided whenever wetlands exist in shoreline areas. R.14 – Providing incentives for restoration projects will benefit ecological functions in all reaches.	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗	↗
Columbia River Reach 1 – East Urban Area	R.5 – Invasive aquatic, riparian and terrestrial species exist along all shoreline reaches and their removal will benefit water quality, water quantity and habitat functions. R.7 – Kanaka Creek separates Columbia River Reaches 1 & 2. This fish-bearing stream has passage barriers along its length. Correction of these barriers will benefit water quantity and habitat functions for these 2 reaches.	↗	↗	↔	↗	↔	↗	↔	↔	↗	↗	↔	↔
Columbia River Reach 2 – Downtown Waterfront	R.5, R.7, R.10, R.15 – See descriptions in CR1, above. R.3 – By completing its Stevenson Shoreline Restoration & Enhancement Project the Port of Skamania County will soften riprap armoring and eliminate excessive erosion in the Downtown Waterfront reach. This will benefit water quality, water quantity, and habitat.	↔	↗	↗	↗	↗	↗	↔	↔	↗	↗	↗	↔
Columbia River Reach 3 – West Urban Area	R.5 – See description in CR1, above.	↔	↗	↔	↔	↔	↗	↔	↔	↗	↔	↔	↗

Shoreline Reach	Impact Narrative	Projected Indicator Changes											
		Available Floodplain Area	Riparian Vegetation	Shoreline Stability	Fish-Blocking Culverts	Permanently Protected Areas	PHS Listings	Wetland Acreage	303(d) Listings	Impervious Surface Areas	Overwater Roads & Structures	Setbacks to OHWM	Urban Runoff
Rock Creek Reach 1 – City Reach	R.5 – See description in CR1, above. R.1 – Continued implementation of this project will help this reach recover a steady-state after being overwhelmed with sediment from the Piper Road landslide. R.2 – Removal of this bridge and all associated pilings will benefit flood and fish passage through the system and greatly improve water quantity and habitat functions. R.8 – Removal of this derelict near-stream structure will improve water quality, water quantity, and habitat functions. R.13 – Replacing the direct stormwater outfall with an engineered treatment system will improve water quality from this outfall, which drains a substantial portion of the city’s residential core.												
Rock Creek Reach 2 – County Reach	R.1, R.2 – See description in RC1, above. R.5 – See description in CR1, above.												
Rock Cove Reach	R.1 – See description in RC1, above. R.5 – See description in CR1, above. R.4 – Rehabilitating Rock Cove involve removing invasive species, improving depth-to-width ratios, removing derelict creosote piles, and removing other remnants of the waterbody’s industrial past. Doing so will improve water quality, water quantity, and habitat functions. R.6 – Replacing the culvert for Foster Creek, which provides a fresh source of surface water to Rock Cove will remove a fish-passage barriers and will benefit water quantity and habitat functions for this reach R.9 – Redevelopment of the Old Hegewald Mill site could involve removal of invasive species and recolonization by native species and improvement of water quality measures for the largely impervious site. This will improve water quality and habitat functions.												
Ashes Lake Reach	No specific restoration projects are identified for this reach.												

Chapter 3 – Cumulative Impacts Analysis

3.1 Net Effect of Impacts

5 The combination of the projected changes in indicators of shoreline ecological functions based on the
CIA Figure 2-1, above enables a cumulative impacts analysis. In most cases, as described below,
implementation of the draft SMP as it relates to foreseeable development as well as implementation of
the Restoration Plan, will likely lead to improved ecological functions in Stevenson’s shoreline areas.
While 3 indicators of ecological function are expected to decline after SMP implementation, there are
protections in place to ensure the decline of the indicator will not lead to a decline of the underlying
ecological function. Chapter 2 of this report identifies some additional protections and changes that
10 could help improve interpretation and implementation and avoid any declines. These
recommendations should be considered 1) as part of the ongoing review and amendment of the SMP
documents and 2) during review of some individual permits identifying impacts that were not
anticipated as part of this cumulative impacts analysis.

3.2 Gained Ecological Functions

15 The following indicators of ecological function are expected to improve if this draft SMP is
implemented.

3.2.1 Available Floodplain Area

20 In general shoreline use and development will not change the available floodplain area, however, the
projects of the restoration plan will lead to improvements in several reaches. As a result, the ecological
functions related to this indicator are likely to see the greatest improvement.

3.2.2 Riparian Vegetation

25 The vegetation conservation, removal and mitigation requirements of the SMP are likely to lead to
another of the greatest improvements in indicators of ecological function expected through this SMP.
The inclusion of restoration projects furthers the benefit and improvement of ecological functions
related to this indicator is expected in all reaches.

3.2.3 Shoreline Stability

The Restoration Plan projects are the primary determinants for improved ecological functions based on
the Shoreline Stability indicator, and the expected improvements are limited to both Rock Creek
reaches.

3.2.4 Fish-Blocking Culverts

30 Fish-blocking culverts should largely be a concept of the past based on existing permit requirements.
Where they currently exist, the Restoration Plan projects prioritize removal, and this should lead to an
improvement of ecological functions, especially based on the Kanaka Creek, Foster Creek, and Rock
Creek Drive Bridge projects.

35 **3.2.5 Permanently Protected Areas**
Where development is expected, the designation of permanently protected areas can also be expected based on SMP provisions requiring conservation covenants for critical areas protection. Ecological functions related to this indicator are likely to improve in all reaches except Ashes Lake.

40 **3.2.6 PHS Listings**
Wherever Riparian Vegetation and Permanently Protected Areas are improved, the quality habitat for PHS Listings should also improve based on the critical areas protections of SMP Section 4.4.

3.2.7 Wetland Acreage
Protections for wetlands are included in SMP Section 4.4, and the Restoration Plan considers projects that will enhance the City's ability to protect and improve wetland functions in shoreline areas.

45 **3.2.8 Overwater Roads & Structures**
Protections related to new Overwater Roads & Structures together with Restoration Plan projects to remove them where they currently exist will lead to an improvement of ecological functions related to this indicator, especially in the Downtown Waterfront, Rock Cove, and Rock Creek reaches.

3.2.9 Urban Runoff
50 Citywide implementation of the Stormwater Management Manual for Western Washington along with voluntary retrofitting and stormwater treatment identified in the Restoration Plan will improve the quality and quantity of runoff received by Stevenson Shorelines. Ecological functions related to this indicator are likely to improve as a result.

3.3 Lost Ecological Functions

55 Based on the current draft SMP, some reduction in ecological function is expected through the following indicators.

3.3.1 303(d) Listings
60 The most variable of the indicators analyzed, 303(d) Listings are largely based on ecosystem-wide processes beyond the scope of this SMP. Protections and restoration related to the SMP and the Restoration Plan exist, but are unlikely to change downward water quality trends, especially in the Columbia River and Rock Cove reaches.

3.3.2 Impervious Surface Area
65 Continued development is expected to occur in shoreline areas and will have an unavoidable impact on total impervious surface coverage. The draft SMP includes some offsets for the underlying ecological functions, but there is expected to be a decrease in rating for this indicator.

3.3.3 Setbacks to OHWM
Similarly, continued development is expected to increase the number of structures in the shoreline area and in all but Columbia River Reach 1, this indicator is expected to decrease. However, the draft SMP includes some offsets to the underlying ecological functions impacted by this decrease.

70 **3.4 Achievement of No Net Loss**

Per the SMA guidance, an SMP must allow “the utilization of shorelines for economically productive uses that are particularly dependent on shoreline location and provides preferential accommodation of single-family uses” while achieving “no net loss” of ecological functions. As this analysis shows, Stevenson’s Draft SMP balances standards of protection to shorelines while allowing and
75 accommodating appropriate shoreline uses and developments justifying that the no net loss standard has been satisfied.

3.4.1 Key Programmatic Protections

The Draft SMP protects shorelines while still accommodating preferred shoreline uses and recognizing private property rights. The proposed regulations are based on a detailed inventory of ecosystem-wide
80 and shoreline reach conditions as well as detailed knowledge about threats facing shoreline resources.

- Shoreline environment designations to protect or enhance the current or desired character of shorelines.
- A system of Prohibited, Conditional, and Permitted uses that provides additional controls leading to the current or desired character of shorelines.
- 85 • General policies and regulations intended to protect the shoreline functions, as well as policies designed to protect specific shoreline functions, such as water quality, water quantity, vegetation, and habitat.
- Specific vegetation conservation standards combined with use setbacks and reach-specific riparian area buffers to protect shoreline ecological functions.
- 90 • Critical areas regulations to provide protections for wetlands, fish and wildlife habitat, critical aquifer recharge areas, flood hazard areas, and geologically hazardous areas.
- Local, state, and federal regulations to ensure that shoreline impacts are avoided, minimized, and/or mitigated.
- Restoration activities and programs that are expected to improve shoreline functions. These
95 non-regulatory enhancement and restoration activities are likely to offset or minimize potentially adverse unanticipated and/or incremental cumulative impacts within the County’s shoreline jurisdiction.

One of the primary ways that no net loss is achieved in the SMP is through vegetation removal and mitigation provisions. The SMP relies on reach-specific shoreline buffers to determine appropriate
100 riparian habitat buffers where heightened standards exist for all types of vegetation removal. Outside of buffer areas, the mitigation requirements of SMP Table 6-2 also apply to removal of all trees in shoreline jurisdiction.

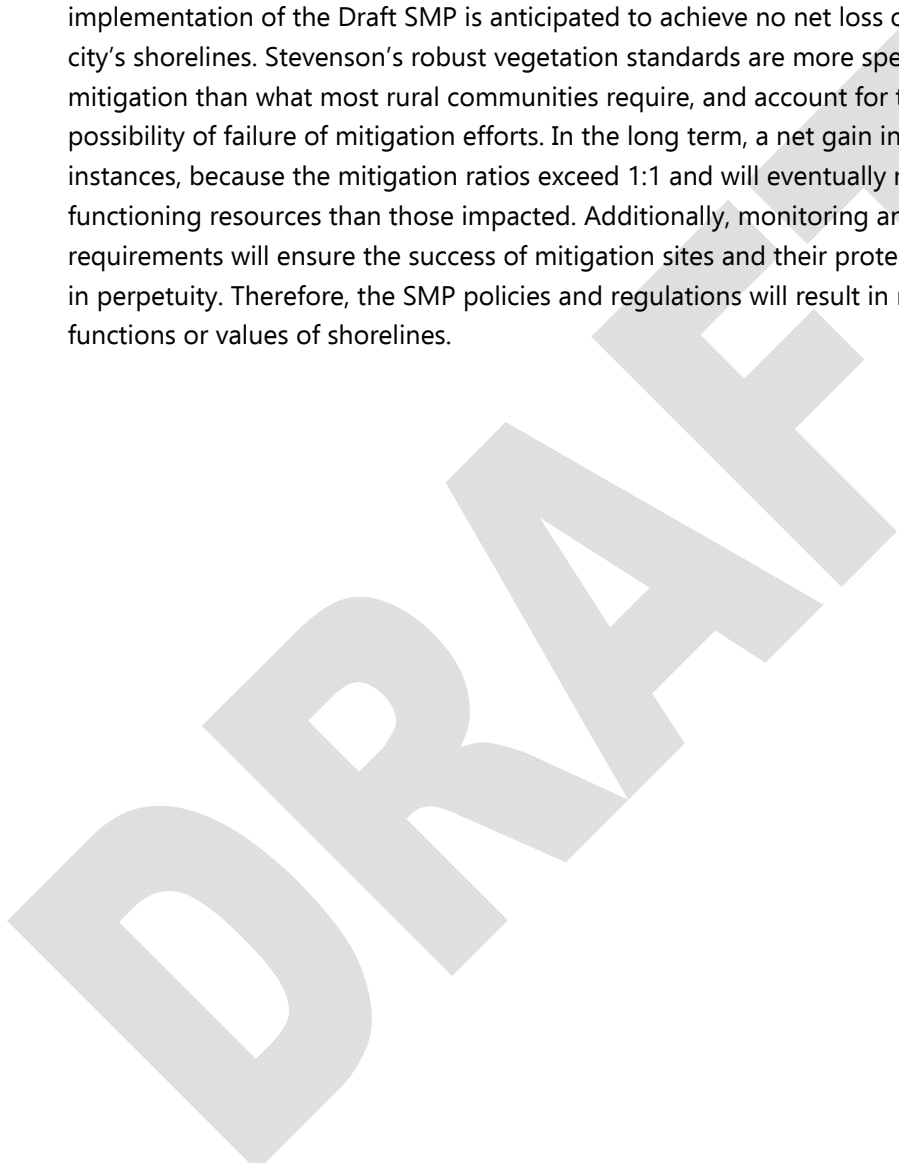
3.4.2 Degraded Indicators vs. Loss of Function

This analysis relies on the several indicators of ecological functions that were established in the Inventory & Characterization Report. These indicators provide measurable comparisons for certain
105 aspects of ecological functions, but changes in-and-of-themselves are not a direct statement of ecological functions. The assessment of indicators related to altered conditions is particularly troublesome in making direct comparisons to net loss of functions, because, as stated above the establishment of economically productive uses in shoreline areas is encouraged. As a result, a
110 balancing act is necessary to ensure additional altered conditions are coupled with improvements to

the indicators related to the physical and biological environment, and more importantly, the water quality, water quantity, and habitat functions of the shoreline. CIA Section 3.2 and 3.3 demonstrate the success of this balancing act within Stevenson’s shoreline jurisdiction.

3.4.3 Conclusion

115 Given the policy guidance and regulatory requirements proposed, including the implementation of the
shoreline restoration plan and the key vegetation removal and setback features listed above, the
implementation of the Draft SMP is anticipated to achieve no net loss of ecological functions in the
city’s shorelines. Stevenson’s robust vegetation standards are more specific and require greater
120 mitigation than what most rural communities require, and account for temporal losses and the
possibility of failure of mitigation efforts. In the long term, a net gain in functions is likely in many
instances, because the mitigation ratios exceed 1:1 and will eventually result in larger, better
functioning resources than those impacted. Additionally, monitoring and conservation covenant
requirements will ensure the success of mitigation sites and their protection from future development
in perpetuity. Therefore, the SMP policies and regulations will result in no net loss of ecological
125 functions or values of shorelines.



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