

# **CUMULATIVE IMPACTS ANALYSIS**

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## **Klickitat County's Shoreline Master Program**

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# TABLE OF CONTENTS

---

	Page #
<b>1 Introduction.....</b>	<b>1</b>
1.1 Background.....	1
1.2 Document Approach and Overview .....	3
<b>2 Summary of Existing Conditions .....</b>	<b>4</b>
2.1 White Salmon (WRIA 29b) .....	5
2.1.1 Environment.....	5
2.1.2 Land Use .....	5
2.2 Klickitat (WRIA 30) .....	6
2.2.1 Environment.....	6
2.2.2 Land Use .....	6
2.3 Rock Creek (WRIA 31) .....	7
2.3.1 Environment.....	7
2.3.2 Land Use .....	7
2.4 Columbia River.....	7
2.4.1 Environment.....	7
2.4.2 Land Use .....	8
<b>3 Future Development .....</b>	<b>8</b>
3.1 Analysis of Development Trends.....	8
3.2 Summary of Reasonably Foreseeable Future Development.....	10
3.2.1 White Salmon and Klickitat (WRIA 28b & WRIA 30).....	10
3.2.2 Rock Creek (WRIA 31).....	10
3.2.3 Columbia River .....	10
<b>4 Application of the SMP.....</b>	<b>11</b>
4.1 Shoreline Environment Designations.....	11
4.1.1 Potential Use Conflicts .....	13
4.2 General Shoreline Regulations .....	14

4.2.1	Environmental protection and critical areas .....	14
4.2.2	Flood hazard management.....	15
4.2.3	Vegetation management.....	15
4.2.4	Water quality .....	15
<b>4.3</b>	<b>Shoreline Use and Modification Provisions.....</b>	<b>15</b>
4.3.1	General shoreline uses .....	16
4.3.2	Agriculture .....	16
4.3.3	Aquaculture.....	17
4.3.4	Marinas & Boating Facilities .....	18
4.3.5	Breakwaters, jetties, groins, and weirs.....	19
4.3.6	Commercial development.....	20
4.3.7	Dredging.....	21
4.3.8	Fill .....	23
4.3.9	Forest Management Practices .....	24
4.3.10	Ports & Industrial Development .....	25
4.3.11	In-Stream Structures.....	26
4.3.12	Mining.....	27
4.3.13	Outdoor advertising, signs, and billboards .....	29
4.3.14	Recreational development .....	30
4.3.15	Residential Development .....	31
4.3.16	Shoreline Habitat and Natural Systems Enhancement Projects.....	32
4.3.17	Shoreline stabilization.....	33
4.3.18	Transportation Facilities .....	35
4.3.19	Utilities .....	37
<b>4.4</b>	<b>Shoreline Restoration Plan .....</b>	<b>38</b>
<b>5</b>	<b>Effects of Other Regulatory Programs .....</b>	<b>39</b>
<b>5.1</b>	<b>County Regulations and Programs .....</b>	<b>39</b>
5.1.1	Critical Area Regulations.....	39
5.1.2	Zoning Code.....	39
5.1.3	Columbia River Gorge Commission .....	40
<b>5.2</b>	<b>Tribal Regulations and Programs .....</b>	<b>40</b>
<b>5.3</b>	<b>State Agencies/Regulations .....</b>	<b>40</b>
5.3.1	Washington Department of Natural Resources (WDNR).....	40
5.3.2	Washington Department of Ecology .....	40
5.3.3	Washington Department of Fish and Wildlife.....	40
5.3.4	State Forest Practices Act.....	41
5.3.5	Surface Mining Act.....	41
<b>5.4</b>	<b>Federal Agencies/Regulations .....</b>	<b>41</b>
5.4.1	Clean Water Act.....	41
5.4.2	Rivers and Harbors Act, Section 10 .....	42
5.4.3	Federal Endangered Species Act (ESA) .....	42
5.4.4	Dredged Material Management Program .....	42

**6 Net Effect on Ecological Functions..... 42**  
**7 References ..... 45**

## LIST OF TABLES

---

Table 4-1	Summary of potential impacts from agriculture. ....	16
Table 4-2	Summary of key agriculture regulations that protect ecological functions.	17
Table 4-3	Summary of potential impacts from aquaculture. ....	17
Table 4-4	Summary of key aquaculture regulations that protect ecological functions.	17
Table 4-5	Summary of potential impacts from Marinas and Boating Facilities .....	18
Table 4-6	Summary of key boating facilities regulations that protect ecological functions. .....	18
Table 4-7	Summary of potential impacts from breakwaters, jetties, groins, and weirs. .....	19
Table 4-8	Summary of key breakwaters, jetties, groins, and weirs regulations that protect ecological functions. ....	19
Table 4-9	Summary of potential impacts from commercial and institutional development. .....	20
Table 4-10	Summary of key commercial and institutional development regulations that protect ecological functions. ....	20
Table 4-11	Summary of potential impacts from dredging.....	21
Table 4-12	Summary of key dredging regulations that protect ecological functions.	22
Table 4-13	Summary of potential impacts from fill material.....	23
Table 4-14	Summary of key fill and excavation regulations that protect ecological functions. .....	23
Table 4-15	Summary of potential impacts from forest management practices. ....	24
Table 4-16	Summary of key forest practices regulations that protect ecological functions. .....	25
Table 4-17	Summary of potential impacts from industrial development. ....	25
Table 4-18	Summary of key industrial development regulations that protect ecological functions.....	26
Table 4-19	Summary of potential impacts from in-water structures. ....	27
Table 4-20	Summary of key in-water structure regulations that protect ecological functions. .....	27
Table 4-21	Summary of potential impacts from mining. ....	27
Table 4-22	Summary of key mining regulations that protect ecological functions. ...	28
Table 4-23	Summary of key recreational development regulations that protect ecological functions.....	29
Table 4-24	Summary of potential impacts from recreational development. ....	30
Table 4-25	Summary of key recreational development regulations that protect ecological functions.....	30
Table 4-26	Summary of potential impacts from residential development. ....	31
Table 4-27	Summary of key residential development regulations that protect ecological functions.....	31

Table 4-28	Summary of potential impacts from restoration.....	32
Table 4-29	Summary of key restoration regulations that protect ecological functions.....	32
Table 4-30	Summary of potential impacts from shoreline stabilization.....	33
Table 4-31	Summary of key shoreline stabilization regulations that protect ecological functions.....	33
Table 4-32	Summary of potential impacts from transportation and parking.....	36
Table 4-33	Summary of key transportation regulations that protect ecological functions.....	36
Table 4-34	Summary of potential impacts from utilities.....	37
Table 4-35	Summary of key utilities regulations that protect ecological functions. ...	37

# LIST OF FIGURES

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Figure 1-1.	Framework to achieve no net loss of ecological function. (Department of Ecology) .....	2
Figure 2-1	Map of Water Resource Inventory Areas in Klickitat County.....	5
Figure 3-1.	Population and housing units in Klickitat County, 1990-2016. Source: OFM 2016; .....	9
Figure 4-1	Distribution of upland environment designations on Klickitat County shorelines. ....	12

# CUMULATIVE IMPACTS ANALYSIS

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## Klickitat County Shoreline Master Program

### 1 INTRODUCTION

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This Cumulative Impacts Analysis (CIA) is a required element of the Klickitat County Shoreline Master Program (SMP) Update.

The CIA assesses the proposed Klickitat County SMP policies and regulations in relation to current shoreline conditions documented in the Shoreline Analysis Report (TWC 2017) to assess if future development approved under the proposed SMP could achieve no net loss of ecological function. This Cumulative Impacts Analysis can help Klickitat County (County) make adjustments where appropriate in its proposed SMP if there are potential gaps between maintaining and degrading ecological functions.

#### 1.1 Background

The State Master Program Approval/Amendment Procedures and Master Program Guidelines (SMP Guidelines; WAC 173-26) require local shoreline master programs to regulate new development to “achieve no net loss of ecological function.” The Guidelines (WAC 173-26-186(8)(d)) state that, “To ensure no net loss of ecological functions and protection of other shoreline functions and/or uses, master programs shall contain policies, programs, and regulations that address adverse cumulative impacts and fairly allocate the burden of addressing cumulative impacts.”

The Guidelines further elaborate on the concept of no net loss as follows:

*“When based on the inventory and analysis requirements and completed consistent with the specific provisions of these guidelines, the master program should ensure that development will be protective of ecological functions necessary to sustain existing shoreline natural resources and meet the standard. The concept of “net” as used herein, recognizes that any development has potential or actual, short-term or long-term impacts and that through application of appropriate development standards and employment of mitigation measures in accordance with the mitigation sequence, those impacts will be addressed in a manner necessary to assure that the end result will not diminish the shoreline resources and values as they currently exist. Where uses or development that impact ecological functions are necessary to achieve other objectives of RCW 90.58.020, master program provisions shall, to the greatest extent feasible, protect existing ecological functions and avoid new impacts to habitat and ecological functions before implementing other measures designed to achieve no net loss of ecological functions.” [WAC 173-26-201(2)(c)]*

In short, updated SMPs shall contain goals, policies and regulations that prevent degradation of ecological functions relative to the existing conditions as documented in that jurisdiction’s inventory and characterization report. For those projects that result in degradation of ecological functions, the required mitigation must return the resultant ecological function back to the baseline. This is illustrated in the figure below. The jurisdiction must be able to demonstrate that it has accomplished that goal through an analysis of cumulative impacts that might occur through implementation of the updated SMP. Evaluation of such cumulative impacts should consider:

- (i) current circumstances affecting the shorelines and relevant natural processes [Chapter 2 below and the Shoreline Analysis Report];
- (ii) reasonably foreseeable future development and use of the shoreline [Chapter 3 below and the Shoreline Analysis Report]; and
- (iii) beneficial effects of any established regulatory programs under other local, state, and federal laws.” [Chapter 5 below]

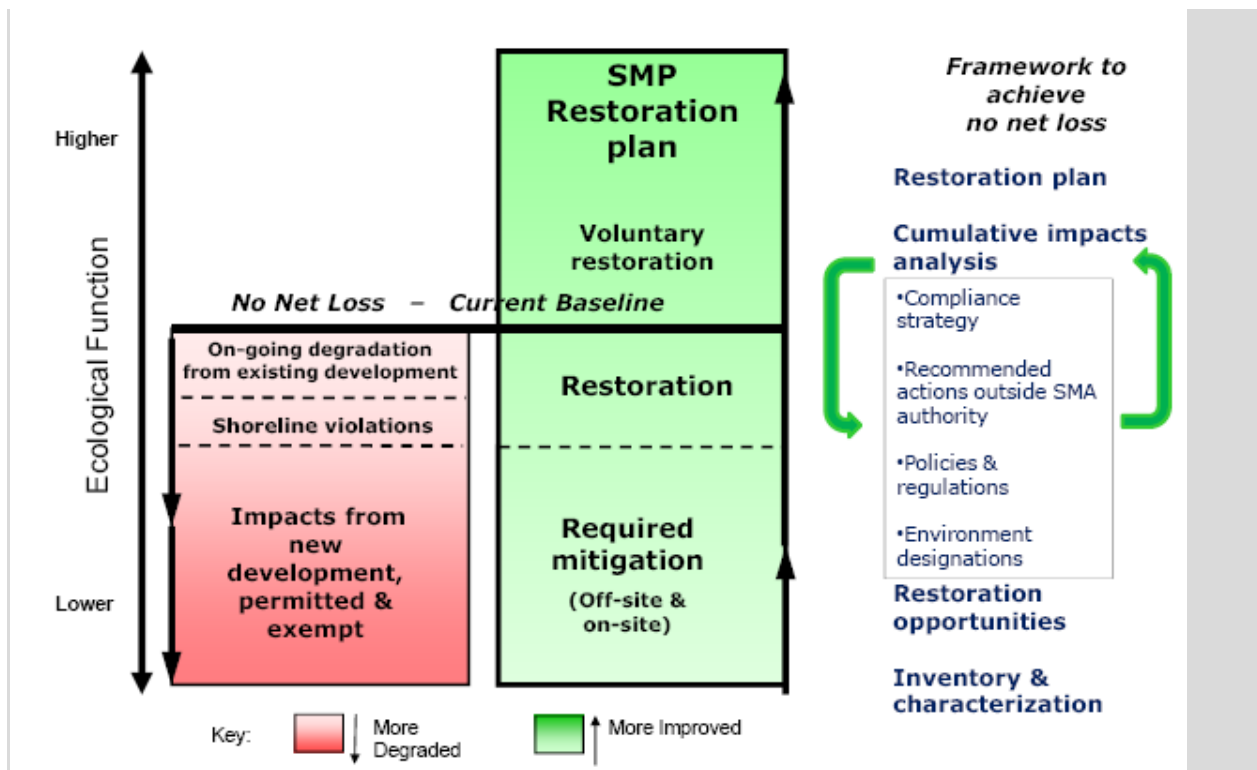


Figure 1-1 Framework to achieve no net loss of ecological function. (Department of Ecology)

The Cumulative Impacts Analysis assesses the policies and regulations in the draft SMP to determine whether no net loss of ecological function will be achieved as new development



occurs. SMP regulations fundamentally rely on the concept of mitigation sequencing to avoid, minimize, and mitigate for any unavoidable losses of function. An accompanying component of the SMP process that can bring environment conditions to an improved level is the Shoreline Restoration Plan, which identifies and prioritizes potential actions and programs that may be implemented on a voluntary basis. These actions, intended to improve existing environmental conditions through a combination of enhancement, restoration, and protection, cannot be required by SMP regulations, but Section 173-26-201(2)(f) of the Guidelines says: “master programs shall include goals, policies and actions for restoration of impaired shoreline ecological functions.” In certain communities or shoreline areas, the SMP may not be able to achieve no net loss of functions through regulations alone. For example, a community may expect a significant reduction in riparian vegetation coverage to accommodate a water-dependent use. Compensatory mitigation would be implemented to offset unavoidable impacts, perhaps through replanting of riparian vegetation in an adjacent site; however, it may take many years before the benefits from the compensatory mitigation are realized. In such a circumstance, as for others, the Shoreline Restoration Plan may help bridge the gap between the SMP-required mitigation outcome and no net loss of ecological function.

As the SMP is implemented, the County will need to identify methods to track shoreline conditions, permit activity, and policy and regulatory effectiveness. County planning staff will be required to track land use and development activity, including exemptions, within shoreline jurisdiction, and may incorporate actions and programs of the other departments as well. With each project application, staff should consider whether implementation of the SMP is meeting the basic goal of no net loss of ecological functions relative to the baseline condition established in the Shoreline Analysis Report. The County will review, and if necessary revise, the SMP at least once every eight years to ensure that the SMP complies with applicable federal, state, and local regulations and is consistent with the County’s comprehensive plan and development regulations in effect at the time of the review. With this level of attention to conditions, permitted development, and adaptive management as needed in the long term, the County should be able to ensure that the regulations and mitigation sequencing required by the SMP will maintain shoreline functions over time.

## **1.2 Document Approach and Overview**

This Cumulative Impacts Analysis (CIA) was prepared consistent with direction provided in the Shoreline Master Program Guidelines as described above. The ultimate goal of this document is to determine whether future development in the County’s shorelines taking place under the proposed SMP would result in no net loss of ecological functions relative to the baseline conditions documented in the Shoreline Analysis Report. To the extent that existing information was sufficiently detailed and assumptions about possible new or re-development could be made with reasonable certainty, the following analysis is quantitative. The analysis in this document is focused on unincorporated county lands.

Existing conditions were first evaluated using the information, both textual and graphic, developed and presented in the Shoreline Analysis Report. A summary of existing conditions,

including ecological conditions and land use, is provided in Chapter 2. More detailed analysis of specific shoreline functions, uses, and public access can be found in the Shoreline Analysis Report.

To understand what future development activities in the county's shorelines might occur that could alter existing conditions, Chapter 3 presents the brief results of an assessment of likely future development. This assessment is based on existing land use conditions, growth trends, and zoning. This approach is based on the rationale that future changes in land use trends will be roughly comparable to past trends. Given the expansive area of the county's shorelines, this approach helps provide a realistic estimate of the level of foreseeable development.

The effects of likely development were then evaluated in the context of SMP provisions, as well as other related plans, programs, and regulations. For the purpose of evaluating impacts, areas with a likelihood of high densities of new development were evaluated in greatest detail. Chapter 4 summarizes this evaluation, describing how foreseeable development could affect shoreline conditions, and what specific provisions of the proposed SMP will help maintain existing conditions in spite of likely future development. Chapter 5 describes the beneficial effects that other established regulatory programs may have on the County's shorelines.

Finally, Chapter 6 synthesizes the information from the previous chapters to assess anticipated cumulative impacts and summarize whether and how the SMP ensures no net loss of ecological functions for shorelines in Klickitat County.

## 2 SUMMARY OF EXISTING CONDITIONS

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This summary of existing conditions is intended to provide an overview of conditions in the county's shorelines, and is based on the Shoreline Analysis Report. This chapter is broken down by Watershed Resource Inventory Areas (WRIAs), describing existing land use and environmental conditions within White Salmon, Klickitat, and Columbia River WRIAs.

Maps of the reaches, and more detailed information on specific shoreline areas, is provided in the Shoreline Analysis Report.

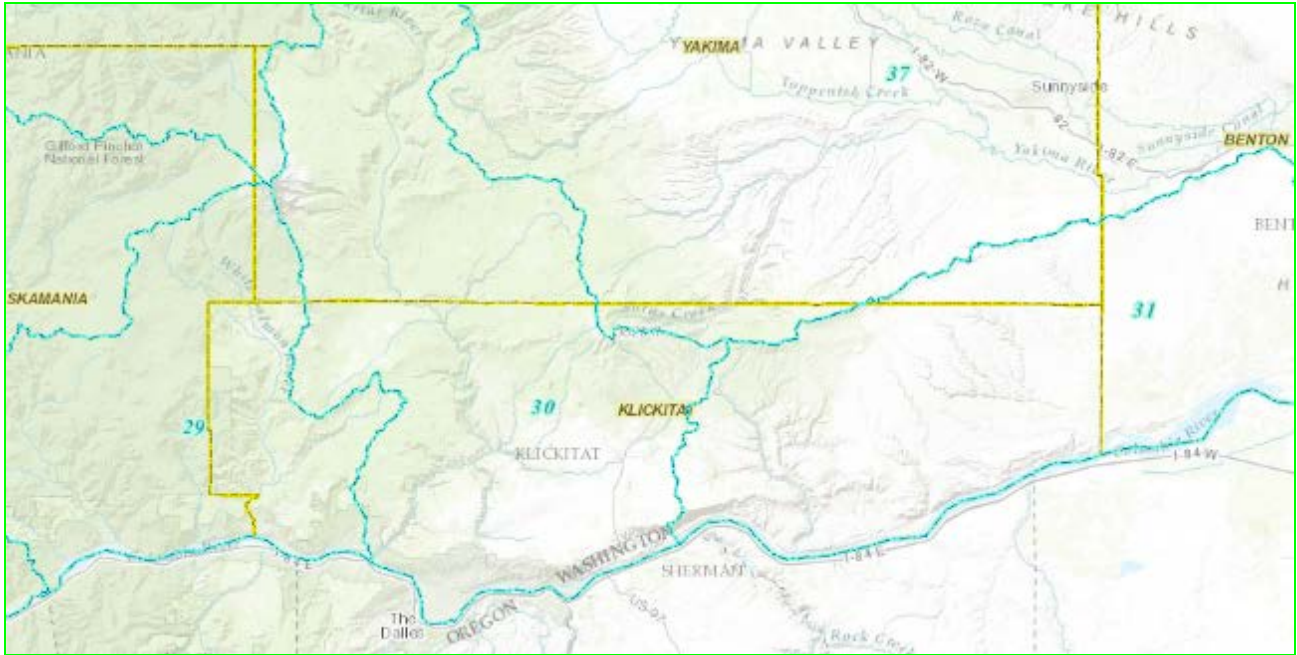


Figure 2-1 Map of Water Resource Inventory Areas in Klickitat County

## 2.1 White Salmon (WRIA 29b)

The White Salmon WIRA is located in the westernmost portion of Klickitat County, taking up 1/7<sup>th</sup> of the County's area (see Figure 2). Major shoreline tributaries to the White Salmon River within Klickitat County include Cave Creek, Buck Creek, Gilmer Creek, Rattlesnake Creek and Trout Lake Creek. The following section addresses the main freshwater drainages in Klickitat County.

### 2.1.1 Environment

The White Salmon River is a tributary to the Columbia River. Upstream ecological functions are highest across the northern portion of the county where broad, dense forested shorelands are present, backwater areas and intact floodplain provide flow attenuation function and there is little shoreline armoring. A high amount of wetland is mapped in Reach 8 and at least one PHS region or species is documented in every reach. Alluvial soils are mapped in Reaches 7 and 8 contributing to higher hyporheic functions in those reaches due to the soils ability to help store water and support vegetation within the shoreline area. Functional ratings are lowest the closer the White Salmon River gets to the confluence of the Columbia River where shorelands have been modified by agricultural and residential uses. Several overwater structures are present near the confluence with the Columbia.

### 2.1.2 Land Use

Shoreline jurisdictions in the White Salmon WIRA are primarily zoned Agriculture or Forest Resource. At the southern edge of the watershed, the removal of Condit Dam in 2011 exposed lands previously inundated by Northwestern Lake; this area is zoned Resource Lands and

owned primarily by PacifiCorp. Upriver, the communities of Trout Lake, BZ Corner, and Husum feature residential development and some commercial development. On the periphery of those communities lies rural residential development mixed with agricultural use. In the upper White Salmon Basin, within Klickitat County and in the vicinity of Trout Lake exists an area of concentrated agricultural use.

Outside of the cities of White Salmon and Bingen, the area is predominantly rural. Much of the shoreline along the White Salmon and its tributaries in WRIA 29b is undeveloped. The primary unincorporated communities include Trout Lake, Husum, and BZ Corner. Commercial development and infrastructure improvements occur primarily in these communities. Highway 141 is the primary highway in the region and generally parallels the White Salmon River.

## **2.2 Klickitat (WRIA 30)**

The Klickitat Watershed occurs within the central part of the County and encompasses approximately half the county's area. The Klickitat River originates in the Goat Rocks Wilderness on the eastern side of the Cascade Mountains. The primary tributary to the lower Klickitat River is the Little Klickitat River, which runs through central Klickitat county and drains the Simcoe Mountains located to the east of the mainstem Klickitat River. Other shoreline tributaries to the Klickitat River within Klickitat County include White Creek, Trout Creek, Dead Canyon Creek, Camas Ditch and Outlet Creek, Summit Creek, Synder Canyon Creek, Swale Creek, Bowman Creek, and Mill Creek.

### **2.2.1 Environment**

A large variety of wildlife species are associated with the Klickitat subbasin because of its diverse vegetative and geologic features. The Klickitat subbasin plan identified 365 wildlife species within the subbasin found within 15 habitat types. A more in-depth list can be found in Table 3-3 of the Analysis Report.

Most of the Klickitat mainstem is a canyon with steep walls and a narrow valley floor. Such steep-walled canyons formed as a result of erosion-resistant basalts which dominate the basin. Local variations in erosion resistance of the underlying geology have resulted in the formation of cascades and waterfalls along the mainstem and in many tributaries. The stream reaches in the plateau areas are lower gradient and are able to develop meander patterns (WPN and Aspect 2005a).

### **2.2.2 Land Use**

The Klickitat Watershed is primarily agricultural in nature with areas on the north end devoted to open space and forestry uses. The USFS has developed and implemented a management plan intended to increase protection of the river. Future development within shoreline jurisdiction of the Lower Klickitat River may be deterred by the protections established in the management plan; however, as with other Wild and Scenic River Management Plans, the USFS

plan for the Klickitat River is a non-regulatory document that provides guidance and recommendations only.

The only area within this watershed containing an Urban/Industrial shoreline environment designation is the old mill site along lower Synder Canyon Creek in the unincorporated town of Klickitat. This site is owned by the county and may again be used for industrial purposes or possibly re-developed for recreational or other use. Upstream from the mill, Snyder Canyon Creek is undeveloped; the western bank is predominantly forested and the eastern bank is mainly sparse forest and open space, and is zoned General Rural.

## **2.3 Rock Creek (WRIA 31)**

Rock Creek is within the Rock – Glade WRIA (31) located in the eastern half of Klickitat County and is a relatively small watershed. Rock Creek originates in the Simcoe Mountains and flows south to meet the Columbia River approximately 21 kilometers upstream of John Day Dam. The major tributaries of Rock Creek include Squaw Creek, Luna Gulch, and Quartz Creek.

### **2.3.1 Environment**

Rock Creek is located in a dry landscape dominated by sagebrush-steppe plant communities and receiving littler water throughout the year. The creek flows from its headwaters in the mountains and plateaus of the Simcoe Mountains through deep canyons before emerging into a wider alluvial valley.

Rock Creek is used by multiple salmonid species including fall Chinook and coho salmon, summer steelhead, and resident rainbow trout. Rock Creek steelhead are listed as “threatened” under the Endangered Species Act (ESA). While investigations show Rock Creek has available habitat for salmonid spawning and rearing, low flow and water quality (specifically temperature) conditions can render this habitat unusable (Allen, Munz, and Harvey, 2013).

### **2.3.2 Land Use**

The Rock Creek watershed is mostly zoned as rural residential with mostly privately owned land and property owned by the Yakama Nation with some land zoned for agriculture. Existing land use within shoreline jurisdiction is predominantly agriculture. Future land use is likely limited to minor residential development.

## **2.4 Columbia River**

Spanning the county’s entire southern boundary with the State of Oregon, the Columbia River ranges from Lake Umatilla on the eastern border to the White Salmon River on the western border.

### **2.4.1 Environment**

Hundreds of fish and wildlife species reside in or migrate through the Columbia River. At least 258 species of birds, 44 species of mammals, and 21 species of reptiles and amphibians have

been reported from habitats along or near the mainstem Columbia River between Wanapum and The Dalles Dams (Ward et al. 2001). While areas of the lower mid-Columbia River historically served as spawning grounds for fall Chinook and steelhead, today the lower mid-Columbia is mostly a migration corridor to and from the Pacific Ocean for adult and juvenile salmonids (NPCC 2004c). Salmon spawning has been observed in limited areas of the Columbia River but most fish species spawn and rear in tributary streams (NPCC 2004c).

## **2.4.2 Land Use**

The Columbia basin supports significant water-dependent commercial and industrial uses, ports, transportation, and urban population centers. The Port of Klickitat County owns and leases commercial and industrial property at two business/industrial parks on the Columbia River. The Dallesport Industrial Park is located in Dallesport across the river from The Dalles, Oregon. The park includes one terminal facility and rail access (served by the BNSF Railway) and borders US Hwy. 197 and the Columbia Gorge Regional Airport. The Bingen Point Business Park is located just outside of Bingen, WA.

The Columbia River has also been designated a National Scenic Area (NSA) in 1991 by the Columbia River Gorge Commission (CRLC) and the USFS with revisions to the regional management plan in 2014. All non-urban areas are subject to land use regulations set by the Columbia River Gorge Commission. CRLC and USFS are soliciting public comments to revise the NSA Management Plan as a part of “Gorge 2020”. CRLC has regulatory authority to approve, approve with conditions, or deny land use applications within Natural Scenic Area jurisdiction (CRLC, 2017).

# **3 FUTURE DEVELOPMENT**

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State SMP guidelines (WAC 173-26) require that jurisdictions preparing SMP updates conduct an analysis to estimate the future demand for shoreline space (WAC 173-26-201(3)(D)). To fulfill this requirement, this section draws on several sources of information to understand potential new shoreline development in the county.

This section first summarizes the results of the land use analysis, including existing land use patterns and trends in population and housing growth, and concludes with a summary of reasonably foreseeable future development within county shorelines.

## **3.1 Analysis of Development Trends**

Two sources of information were used to assess the likelihood and magnitude of new development. The first is the summary of past population and housing unit growth trends in the county. The Washington State Office of Financial Management (OFM) provides estimates of intercensal population and housing units for each County in the state. Over the past 26 years

(1990 – 2010), Klickitat County (unincorporated Klickitat County in particular) has experienced a low annual growth rate in population and housing units. In 2013, the population of Klickitat County was approximately 21,000. Population has remained steady with a less than one percent annual growth rate since 2000. The trend for housing units is consistent with population growth, with a one percent annual growth rate since 1990.

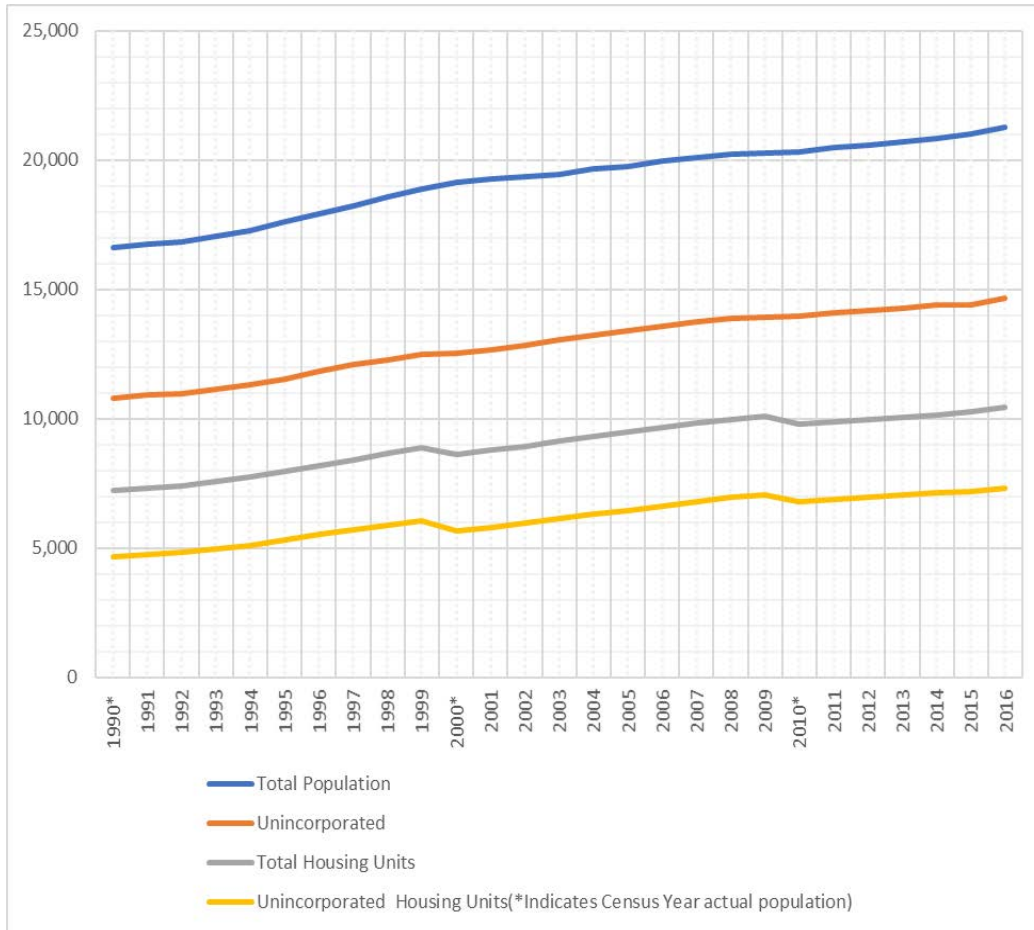


Figure 3-1. Population and housing units in Klickitat County, 1990-2016. Source: OFM 2016; The majority of Klickitat County residents reside in its unincorporated areas. In 2010, the population of unincorporated county lands was 13,975, or approximately 69 percent of countywide population. The annual growth rate of population in unincorporated Klickitat County has been less than one percent annually since 1990. In 2016, there were an estimated 7,298 housing units in unincorporated Klickitat County, or around 70 percent of the county’s total housing units (OFM 2016).

The second source of information is the housing permits reported and issued in Klickitat County between 2004- 2017 which shows an upward trend between the years of 2011 and 2017 (TIP Strategies 2017, SOCDS 2017). The peak within this range was in 2015 with a high of 106 building permits issued in unincorporated Klickitat County (SOCDS 2017). The documented building permit activity of approximately 80-100 issued building permit per year in the last

eight years supports the roughly 1% growth in population within unincorporated Klickitat County.

## **3.2 Summary of Reasonably Foreseeable Future Development**

### **3.2.1 White Salmon and Klickitat (WRIA 28b & WRIA 30)**

Based on zoning and proposed shoreline environment designations, future development in the White Salmon and Klickitat WRIsAs will likely be generally consistent with existing uses and development patterns. The majority of the shoreline is used for forestry practices, which are expected to continue. Other lower-intensity land uses such as agriculture, government, recreation, and residential development will continue to grow as well. However, the majority of available vacant land is designated as conservancy, which will limit the type and intensity of development. Future development is expected to follow the slow pace of development experienced in recent years.

### **3.2.2 Rock Creek (WRIA 31)**

Based on zoning and shoreline environment designations which are not proposed to change, future development in the Rock Creek WRIA will likely be generally consistent with existing uses and development patterns. The majority of the shoreline is used for agricultural practices, which is expected to continue. Residential development is generally low-intensity in shoreline jurisdiction. The majority of available vacant land is designated as conservancy, which will limit the type and intensity of development. Future development is expected to follow the slow pace of development experienced in recent years.

### **3.2.3 Columbia River**

There is opportunity for both expanding existing commercial and industrial properties within sites located near existing urban population centers and future development within the Roosevelt region in the southeastern portion of the county. The sites where an emphasis of economic development expansion is available includes the following areas: Bingen Harbor, Wishram BNSF Rail terminal, Dallesport Airport an associated Dalles Dam, and the John Day Dam. Other areas with development potential include the agricultural communities of Alderdale and Lyle, and Roosevelt. In 2013, BNSF invested \$125 million in railway improvements between Vancouver, WA and Wishram to improve track structure (The Columbian, 2014).

Based on zoning and proposed shoreline environment designations, future development in the Columbia River upland areas will likely be generally consistent with existing uses and development patterns. The majority of the shoreline is vacant due to its steep and unstable slopes, with the majority of available vacant land designated as conservancy, which will limit the type and intensity of development. Future development is expected to follow the slow pace of development experienced in recent years.



## 4 APPLICATION OF THE SMP

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This chapter describes how foreseeable development could affect shoreline conditions, and what specific provisions of the proposed SMP will help maintain existing conditions in spite of likely future development. This chapter begins, in Section 4.1, with a summary of the county's proposed environment designation scheme and a discussion of how the scheme allocates allowed uses by relating environment designations to ecological functions. Section 4.2 presents key general standards and regulations in the SMP intended to protect the ecological functions of the shoreline. Section 4.3 includes the following for each specific use or modification listed in the SMP:

- An assessment of the future development potential for the use or modification, if allowed by available data;
- A summary of the potential impacts that could result from future development of the specific use or modification; and
- A summary of key regulations in the SMP that would avoid, minimize, or mitigate potential impacts.

Chapter 4 concludes, in Section 4.4, with a discussion of the potential beneficial effects of the Shoreline Restoration Plan.

### 4.1 Shoreline Environment Designations

The first line of protection of the county's shorelines is the shoreline overlay district environment designation assignments. According to the Guidelines (WAC 173-26-211), the assignment of environment designations must be based on the existing use pattern, the biological and physical character of the shoreline, and the goals and aspirations of the community as expressed through a comprehensive plan.

The assignment of environment designations can help minimize cumulative impacts by concentrating development activity in lower functioning areas that are not likely to experience significant function degradation with incremental increases in new development or redevelopment.

Consistent with WAC Shoreline Master Program Guidelines, the county's environment designation system is based on the existing use pattern, the biological and physical character of the shoreline, and community interests. The Shoreline Analysis Report provided information on shoreline conditions and functions that informed the development of environment designations for each of the shoreline waterbodies. The proposed upland environment designations are as follows:

- Natural
- Conservancy
- Rural

- Community
- Urban/Industrial

A summary of the distribution of shoreland area among environment designations is provided in Figure 4-1.

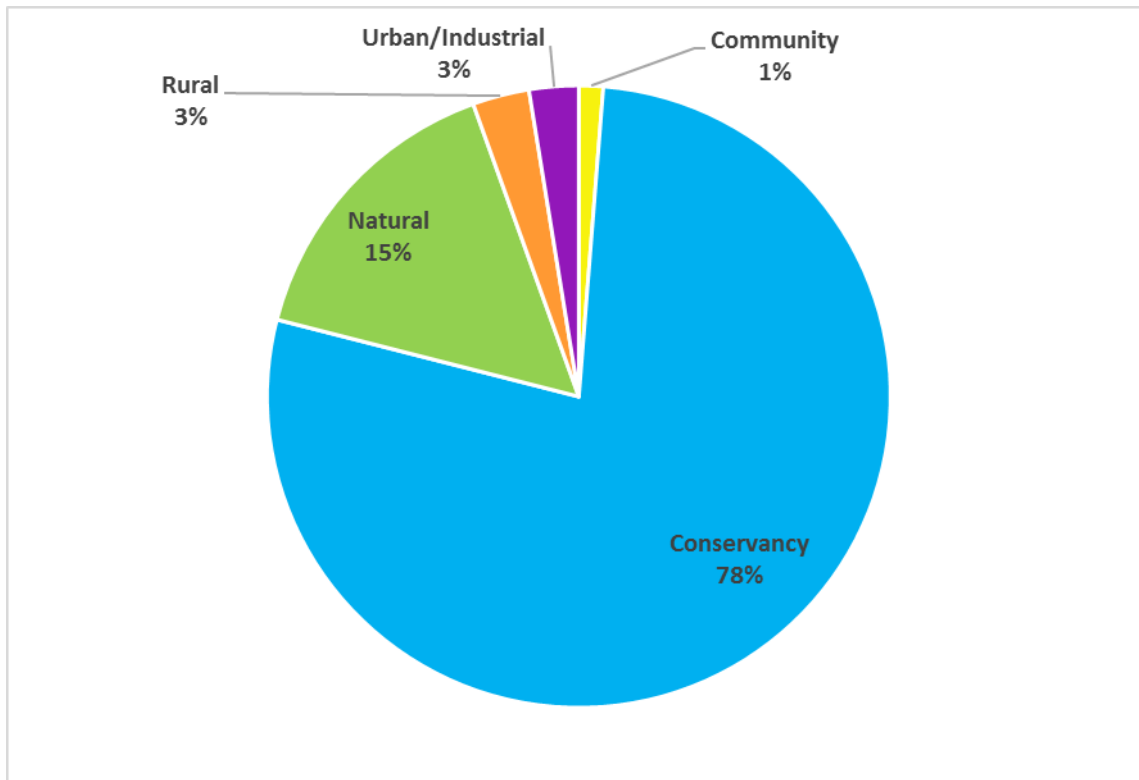


Figure 4-1 Distribution of upland environment designations on Klickitat County shorelines.

**Natural.** The Natural environment is characterized by the presence of some unique natural or cultural features considered valuable in their natural or original condition which are relatively free of human influence and considered valuable in its natural or original condition. The designation is appropriate for shoreline areas that are currently performing an important, irreplaceable function or ecosystem-wide process that would be damaged by human activity, and that therefore are unable to support new development or uses without significant adverse impacts to ecological functions. Approximately 3,223 acres, or 15 percent of the county's shorelines are designated Natural environment.

**Conservancy.** The Conservancy environment is intended for areas for very low intensity land uses, low land values and relatively severe biophysical limitations. Approximately 16,513 acres, or 78 percent of the county's shorelines are designated Conservancy environment.

**Rural.** The Rural environment is intended to protect agricultural land from Urban expansion by setting aside areas that have a high capability to support agriculture. Low-density residential and moderate intensity recreational uses are appropriate for this area. Approximately 611 acres, or 3 percent of the county's shorelines, are designated Rural environment.

**Community.** The Community environment is characterized as an area of moderate intensity land use including residential, recreational and commercial development. Approximately 260 acres, or 1% of the county's shorelines, are designated Community.

**Urban/Industrial.** The Urban/Industrial area is characterized by high intensity and diverse land uses such as commercial and industrial development, as well as community facilities. The designation is appropriate for those shoreline areas owned or managed by the public Port of Klickitat County or other areas which support high-intensity uses related to commerce, transportation, or navigation, or are suitable for high-intensity water-oriented uses (e.g. Roosevelt). Approximately 533 acres, or 3 percent of the county's shorelines, are designated Urban/Industrial environment.

The Permitted Shoreline Uses and Modifications by Environment Designation Use and Modification Matrix (SMP 4.2) identifies the prohibited and allowed uses and modifications in each of the shoreline environments. Section 4.2 clearly shows a hierarchy of higher-impacting uses and modifications being allowed in the already highly-altered shoreline environments, with more limited uses in the less developed areas either through prohibition or a requirement for a shoreline conditional use permit. The allowed and prohibited uses established in this table help minimize cumulative impacts by concentrating high intensity development activity in lower functioning areas that are less likely to experience significant function degradation with incremental increases in development. Additionally, allowed uses are subject to the general provisions of the SMP (see Section 4.2), as well as the provisions specific to that use or modification (see Sections 4.3 and 4.4). These provisions are intended to minimize adverse impacts from shoreline uses, and help ensure that such uses result in no net loss of ecological functions.

#### **4.1.1 Potential Use Conflicts**

In general, the proposed SMP includes prohibited and permitted uses specific to environment designations that limit potential conflicts between neighboring uses and ensure that uses are consistent with comprehensive plans and zoning.

Although there is potential for future use conflict, particularly in land use zones that provide a wide variety of land uses, the proposed SMP provides guidance and a regulatory framework that helps minimize or avoid future use conflicts in shoreline jurisdiction. Similarly, the

proposed SMP provides a framework for allowing and/or encouraging shoreline preferred uses in the shoreline jurisdiction.

## **4.2 General Shoreline Regulations**

### **4.2.1 Environmental protection and critical areas**

#### *Mitigation Sequencing*

The proposed SMP includes general regulations requiring projects to be designed, located, sized, constructed and maintained to achieve no net loss of shoreline ecological functions. The mitigation sequence is a series of measures that can be applied to a project to ensure that it achieves no net loss of ecological function. Mitigation sequencing applies to all projects in shoreline jurisdiction.

For some development activities, provisions in the SMP stipulate specific, objective standards for avoiding impacts (e.g. placement), minimizing impacts (e.g. size), and compensating for unavoidable impacts (e.g. planting requirements). If a proposed shoreline use or development is entirely addressed by such standards, then further mitigation sequencing analysis is not required.

However, in the following situations, applicants must provide an analysis of how the project will follow the mitigation sequence:

- If a proposed shoreline use or modification is addressed in any part by discretionary standards (such as standards requiring a particular action “if feasible” or requiring the minimization of development size) contained in the shoreline regulations, then the mitigation sequence analysis is required for the discretionary standard(s).
- When an action requires a Shoreline Conditional Use Permit or Shoreline Variance Permit.
- When specifically required by a provision in the SMP.

The application of mitigation sequencing standards and specific objective standards will help ensure that shoreline uses and modifications achieve no net loss of shoreline ecological functions.

#### *Shoreline Critical Areas*

The proposed SMP incorporates standalone critical areas regulations in shoreline jurisdiction, outlined in Appendix B of the SMP. These regulations apply to wetlands, fish and wildlife habitat conservation areas, geologically hazardous areas, critical aquifer recharge areas, and frequently flooded areas. A comparison of proposed and existing shoreline buffers and building setback distances by environment designation for the Natural, Conservancy, Rural, Community, Urban/Industrial, and Aquatic environments is provided in Dimensional Standards Matrix found in Chapter 4-3 of the SMP Update Report.

## **4.2.2 Flood hazard management**

Weather pattern fluctuations resulting in extreme drought or flood conditions may increase future demand for flood hazard management facilities. Per Section 4.4.6 of the proposed SMP, uses and activities within the channel migration zone and floodway are limited to restoration, redevelopment of existing legal structures and uses, forest practices, ongoing agricultural practices, mining, and transportation or other public utility development where no other feasible alternative exists (SMP 4.4.6.B.1). New structural flood hazard reduction measures must assure no net loss of ecological functions (SMP 4.4.6.B.2.a.).

## **4.2.3 Vegetation management**

In addition to vegetation management regulations contained in Appendix B, the proposed SMP includes shoreline vegetation conservation standards in Section 4.4.5. The section requires that vegetation clearing be limited to the minimum necessary, and that any adverse impacts from vegetation removal be mitigated in accordance with the SMP's mitigation sequencing requirements (SMP 4.4.5.B.3). Native trees must be replaced at a ratio of two to one (SMP 4.4.5.B.7.).

## **4.2.4 Water quality**

The proposed SMP would require that all shoreline uses and activities incorporate measures to protect and maintain surface and groundwater quality and quantity, and to control erosion, while adhering to the guidelines, policies, standards, and regulations of management programs and regulatory agencies (SMP Section 4.4.4.B.). It also defines standards for materials that come into contact with water as well as for the bulk storage of oil and other chemicals (SMP Section 4.4.4.B.5.). Sewage disposal facilities, including on-site sewage systems, must meet all applicable state and local regulations. Storm drainage will be treated for water quality and quantity and the drainage facilities will be separate from sewage disposal systems (SMP Sections 4.6.1B.11.).

## **4.3 Shoreline Use and Modification Provisions**

The following two sections (4.3 and 4.4) provide a brief summary of the primary potential ecological impacts that may arise from various shoreline uses, shoreline modifications, as well as a summary of the proposed SMP regulations intended to conserve ecological functions and prevent adverse cumulative impacts. The sections are organized according to the document structure of the proposed SMP. Tables are included to summarize potential impacts and key provisions in the proposed SMP that address those impacts.

Regulations that help ensure that impacts are avoided, minimized, and mitigated can be separated into the following three general categories: (1) provisions that allow, condition, or prohibit specific types of development depending on Shoreline Environment Designation; (2) provisions that apply specific standards that help avoid and minimize potential impacts; and (3) provisions that require mitigation of impacts and/or demonstration of no net loss of functions.

The potential impacts described in the sections below account for the more significant or most likely impacts, but may not account for the full suite of potential impacts from a given use or modification. These less significant or less likely impacts, while not specifically discussed below, would be addressed during the permitting process through mitigation sequencing requirements. Also, the listing of potential impacts does not mean that these impacts occur in every instance of a certain use or modification.

### 4.3.1 General shoreline uses

Chapter 5 of the proposed SMP includes general standards, permit processes, and enforcement applicable to all shoreline uses and modifications. Dimensional standards, including shoreline buffers and setbacks for non-water-dependent uses, minimum shoreline frontage widths, and maximum impervious surface areas, are defined by environment designation in SMP Table 4-3 (Klickitat County Dimensional Standard[s]). As with the permitted and prohibited uses within each environment designation, these provisions ensure that ecologically intact shorelines receive maximum protection from development impacts. SMP 4.7.1.B.1 requires that structural shoreline modifications only be allowed when necessary to support or protect allowed primary structures or legally existing shoreline uses in danger of loss or substantial damage, or is necessary for mitigation or enhancement of the shoreline. SMP 4.7.1.B.4 requires that new development be located and designed to ensure no net loss of ecological functions.

### 4.3.2 Agriculture

Ongoing agricultural activities and areas designated as agricultural lands are exempt under the proposed SMP, though new and expanded agricultural uses and developments are not exempt. Nearly 40 percent of the County’s shoreline area is in agricultural use. Potential impacts from agriculture are summarized below in Table 4-1. Key regulations in the proposed SMP that address potential impacts from agriculture are listed below in Table 4-2. These regulations apply to new or expanded agricultural uses and developments on land not meeting the definition of agricultural land (SMP Glossary).

Table 4-1 Summary of potential impacts from agriculture.

Functions	Potential Impacts to Functions
Hydrologic	Agricultural irrigation from wells may affect ground water.
	Direct irrigation withdrawals may affect base flows.
Water Quality	Increased erosion from removal of trees or tilling of soil.
	Potential for livestock waste, pesticides, herbicides, and fertilizers to enter waterbodies through runoff.
Vegetative/Habitat	Reduction in forest cover associated with conversion of lands to agricultural uses.

Table 4-2 Summary of key agriculture regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Agriculture (4.5.1.B.)	Agricultural uses and activities, including single-family residences associated with agricultural uses, shall be located and designed to ensure no net loss of shoreline ecological function. (4.)
	Discharge of any manure storage facility into ground or surface water is prohibited. (5.)
	New feedlots, stockyards, and manure lagoons, including commercial dairying, poultry farming, and hog ranching, are prohibited within shoreline jurisdiction. (6.)
	Diversion of water for agricultural purposes shall be consistent with federal and state water rights laws and rules. (7.)
	A shoreline permit shall be required for all agricultural activities not specifically exempted by the provisions of RCW 90.58.030(3)(e)(iv). Nothing in this section limits or changes the terms of the current exception to the definition of substantial development. (8.)

### 4.3.3 Aquaculture

Ongoing aquaculture uses are not subject to the SMP. New or expanded aquaculture activities require shoreline approval.

Table 4-3 Summary of potential impacts from aquaculture.

Functions	Potential Impacts to Functions
Hydrologic	Alteration in hydrologic and sediment processes associated with aquaculture structures.
Water Quality	Reduction in phytoplankton concentrations through bivalve filtration.
Vegetative/ Habitat	Creation of habitat structure for epibenthic invertebrates and fish.
	Reduction in density of eelgrass, but increasing growth rate and size.
	Accidental introduction of non-native species.

Table 4-4 Summary of key aquaculture regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and Modification Matrix (4.2)	The Use and Modification Matrix (4.2) provides a detailed breakdown of aquaculture activities which are permitted, conditionally permitted, or prohibited by shoreline environment designation in order to protect ecological functions. Please refer to SMP.
Aquaculture (4.5.2.B.)	Aquacultural facilities must be designed and located so as not to spread disease to native aquatic life and so as not to establish new nonnative species which cause significant ecological impacts. (3.)
	Construction of facilities shall include provisions for solid and liquid waste disposal methods that will maintain water quality. Applicants shall provide some formal verification that their facility will maintain water quality standards. (4.)

Location in SMP	Key Provision Providing Protection of Ecological Functions
	Aquacultural structures and activities that are not water dependent (e.g., warehouses for storage of products, parking lots) shall, to the extent feasible, be located inland at a minimum of 50 feet landward from the ordinary high-water line to minimize detrimental impacts to a shoreline. (6. and 10.)
	Shore support structures located over water shall only be permitted if it is clearly demonstrated that the use is dependent upon the location for aquaculture operations. (7.)
	Hatchery operations shall be required to maintain a minimum fifty-foot-wide vegetated buffer zone along the affected streamway, provided: that clearing of vegetation shall be permitted for essential water access points. (8.)

### 4.3.4 Marinas & Boating Facilities

Marinas are facilities providing boat launching, storage, supplies and services for small pleasure craft and apply to any facility with ten or more moorage slips. A boating facility is any ramp, launch, moorage or other development designed to facilitate water access, and applies to a facility with nine or less moorage slips, excluding docks serving four or fewer single-family residences.

Table 4-5 Summary of potential impacts from Marinas and Boating Facilities

Functions	Potential Impacts to Functions
Hydrologic	Potential interference with movement of sediments, altering substrate composition.
Water Quality	Water quality impacts associated with construction of docks and other in-water structures (e.g. spills, harmful materials use) and related uses of new docks (e.g. boat maintenance and operation).
Vegetative/ Habitat	Increased shading in shallow-water habitat areas resulting from dock and pier construction can limit growth of aquatic vegetation and alter habitat for and behavior of aquatic organisms, including juvenile salmonids.
	Disturbance of substrate from pilings and anchors.
	Nighttime lighting can impact fish behavior.
	Loss of habitat for benthic community, less LWD for habitat complexity.

Table 4-6 Summary of key boating facilities regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and Modification Matrix (4.2)	The Use and Modification Matrix (4.2) provides a detailed breakdown of boating facilities which are permitted, conditionally permitted, or prohibited by shoreline environment designation in order to protect ecological functions. Please refer to SMP.
Marinas & Boating Facilities (4.6.4.B.)	The Washington State Department of Fish and Wildlife has prepared guidelines concerning the construction of marinas and boating facilities. These guidelines shall be consulted in planning and prior development. The resulting project, including any required mitigation, will result in no net loss of ecological functions.



Location in SMP	Key Provision Providing Protection of Ecological Functions
	(1. and 1a.)
	Covered moorage is allowed when consistent with other applicable regulations. (5.)
	Liveaboards shall be discouraged. When allowed, they shall be connected to upland sewage facilities at all times that they are within the moorage. (6.)
	New or expanded marinas shall include sanitary pumpout facilities available to the public unless the lack of need for such facilities is documented by the applicant. (7.)
	No marinas or boat facilities shall be allowed on the free-flowing portion of shorelines of statewide significance. (8.)
	Extended vessel mooring on waters of the state must be allowed by applicable state regulations, requires a lease or permission be obtained from the state, and must mitigate impacts to navigation and public access. (10.)

### 4.3.5 Breakwaters, jetties, groins, and weirs

Existing breakwaters, jetties, groins, and weirs play significant roles in maintaining aquatic uses in Klickitat County. Jetties on the Columbia River support navigation, breakwaters protect marinas, and groins are integrated into shoreline stabilization structures. Weirs are present in several of the river systems of the county. Maintenance and repair of these structures is anticipated. New facilities, although not commonly anticipated, may be necessitated to protect public, commercial, and industrial infrastructure and ongoing navigational uses.

Table 4-7 Summary of potential impacts from breakwaters, jetties, groins, and weirs.

Functions	Potential Impacts to Functions
Hydrologic	Potential interference with movement of sediments, altering substrate composition.
Water Quality	Reduced circulation and associated changes in water quality.
Vegetative/ Habitat	Instream habitat alterations and shading.

Table 4-8 Summary of key breakwaters, jetties, groins, and weirs regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and Modification Matrix (4.2)	Permitted if used to protect or restore ecological functions in all environments. Fixed and floating structures are conditionally allowed in Urban/Industrial environments only.
Breakwaters, Jetties, Groins, and	Breakwaters, jetties, groins, and weirs located waterward of the ordinary high-water mark shall be allowed only where necessary to support water-dependent uses, public access, shoreline stabilization, or other specific public purpose. (1.)

Location in SMP	Key Provision Providing Protection of Ecological Functions
Weirs (4.7.2.B.)	Breakwaters shall not be permitted where public use of a water surface would be severely restricted. (2.)
	Proposed designs for new or expanded breakwaters, jetties, and groins shall be designed by and so certified by a registered civil engineer. (4.)
	Breakwaters shall not be constructed unless positive need has been demonstrated. Applications shall include an evaluation for the need of a breakwater and shall only be allowed to protect water dependent activities and as an integral component of a harbor, marina, or port. (6. and 7.)
	Breakwaters, jetties, groins and weirs shall be designed to protect critical areas, and shall provide for mitigation according to the sequence in 4.4.1.B.18. (8.)
	The design of jetties and groins shall conform to all applicable requirements established by the State Department of Fish and Wildlife and the U.S. Army Corps of Engineers. (9.)
	Jetties and groins shall only be permitted for navigational purposes, industrial activity, marinas, and public beach management as integral components of an overall development plan. (11.)

### 4.3.6 Commercial development

Commercial development is concentrated in existing areas designated as Urban/Industrial environments. This pattern of development is anticipated to continue in the future. Under the proposed SMP, new institutional uses must comply with regulations for commercial development (SMP 4.6.1).

Table 4-9 Summary of potential impacts from commercial and institutional development.

Functions	Potential Impacts to Functions
Hydrologic	Increase in stormwater runoff and discharge in association with more impervious surfaces.
	Disruption of shoreline wetlands.
Water Quality	Increase in contaminants associated with the creation of new impervious surfaces (e.g. metals, petroleum hydrocarbons).
	Water quality contamination from use and storage of toxic substances.
	Greater potential for increased erosion, bank instability, and turbidity associated with vegetation clearing.
Vegetative/ Habitat	Reduced shoreline habitat complexity, increased water temperatures, and less LWD.
	Loss of or disturbance to riparian habitat during upland development.
	Lighting effects on both fish and wildlife.

Table 4-10 Summary of key commercial development regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline	Commercial development is prohibited in the Natural environment.
	Non-water-oriented commercial development is prohibited outside of the

Location in SMP	Key Provision Providing Protection of Ecological Functions
Use and Modification Matrix (4.2)	Urban/Industrial designation unless part of a mixed-use development located in Community, Conservancy, or Rural environments.
Commercial Development (4.6.1.B.)	Special considerations for enhancing the relationship of an activity to a shoreline. (1c.)
	Nonwater-oriented commercial use and development adjacent to the shoreline may be allowed as a conditional use, if either the use is a part of a mixed-use project that includes water-oriented uses and provides public benefit; or if public access is not possible per one or more circumstance listed in Subsection 4.4.3.B.3, the project provides significant ecological restoration. (4.)
	Commercial developments shall use holding systems to control runoff from parking lots and rooftops wherever possible. (8.)
	Fuel storage tanks and pumps shall be located, designed and constructed so that any leaks or spills will not enter adjoining water bodies. (9.)
	Commercial developments shall not contaminate surface waters, deplete or contaminate ground water supplies, nor generate increased surface runoff where such runoff would result in adverse downstream effects. (10.)
	Sewage disposal facilities and water supply facilities must be provided in accordance with appropriate state and local health regulation. Storm drainage facilities shall be separate, not combined with sewage disposal systems. Storm drainage shall be treated, both in terms of water quality and water quantity. (11.)
	For commercial structures on shorelines of statewide significance a height limitations for any new or expanded building or structure may be more restrictive than 35 feet in height when said structures or buildings would obstruct the view of a substantial number of residences or upland property. (12.)
Commercial development must not result in a net loss of shoreline ecological functions or have significant adverse impact to other shoreline uses, resources and values such as navigation, recreation and public access. (13.)	

### 4.3.7 Dredging

Dredging is normally done for specific purposes or uses, such as constructing and maintaining canals, navigation channels, turning basins, harbors, or marinas, sub-marine pipelines, or cable crossings; for obtaining material for fill or construction as part of an Aquaculture operation; or for repair and maintenance. Dredging may also be used for underwater mining activities.

Table 4-11 Summary of potential impacts from dredging

Functions	Potential Impacts to Functions
Hydrologic	Alteration of hydrologic and sediment processes.
Water Quality	Reduction in water quality from turbidity and in water dredge material disposal.
Vegetative/ Habitat	Disruption of benthic community and submerged aquatic vegetation.
	Reduction in shallow-water habitat.

Table 4-12 Summary of key dredging regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and Modification Matrix (4.2)	Upland dredge material disposal and dredging activities are prohibited in the Natural environment and is a conditional use in all other environments. Dredging maintenance plans are a permitted use in all environments. See SMP table 4.2 for more detail.
Dredging and Dredge Material Disposal: General Requirements (4.7.3.B.)	New development shall be sited and designed to avoid or, if that is not possible, to minimize the need for new and maintenance dredging. (1.)
	Applications for shoreline dredging and disposal shall provide, at minimum, the following information: Physical, chemical, and biological analysis of material to be dredged; method of disposal; hydraulic analyses, and assessment of water quality impacts. (2a-f)
	In evaluating permit applications for any dredging project, dredging and dredge spoil disposal shall be permitted only where demonstrated that proposed actions will not: result in significant damage to water quality, fish, shellfish, and other essential biological elements; or adversely alter natural drainage and circulation patterns, currents, river and tidal flows, or significantly reduce flood water capacities. (3a., 3b.)
	Proposals for dredging and dredge spoil disposal shall include all feasible mitigating measures to protect habitats and to minimize adverse impacts such as turbidity, release of nutrients, heavy metals, sulfides, organic materials or toxic substances, dissolved oxygen depletion, disruption of food chains, loss of benthic productivity and disturbance of fish runs, and important localized biological communities. (4.)
	Marshes, bogs, and swamps shall not be disturbed or altered through excavation, filling, dredging or disposal of dredged material unless it is demonstrated that there are no feasible alternatives and that the proposed development would preserve or enhance wildlife habitats, natural drainages, and/or other valuable functions of wetlands (as discussed in U. S. Army Corps of Engineers 33 CFR 320.4(b)). (5.)
Dredging and Dredge Material Disposal: Dredging (4.7.3)	Dredging and dredge spoil disposal shall be carefully scheduled to protect biological productivity (fish runs, spawning, benthic productivity, etc.) and to minimize interference with fishing activities. Dredging activities should not occur in areas used for commercial drift net fishing during a fishing season. (6.)
	Dredging below the ordinary high water mark shall be permitted only for navigational access when significant ecological impacts are minimized and mitigation is provided; as part of an approved habitat improvement project; or to improve water flow or water quality, provided that all dredged material shall be managed so as to prevent it from reentering a water. (7.a.1., 7.c., 7.d.)  Dredging shall not occur along: a) net positive drift sectors and where geo-hydraulic processes are active and accretion shore forms would be damaged or irretrievably lost; b) in shoreline areas with bottom soils that are prone to sloughing, refilling, and continual maintenance dredging; c) in officially designated fish, shellfish, and wildlife spawning, nesting, harvesting, and concentration areas as defined by the Washington Marine Atlas (DNR), and other official documents of local, state, and federal resource agencies; d) in floodways, other than the Columbia River, except for gravel bar scalping. (8.a.-d.)

Location in SMP	Key Provision Providing Protection of Ecological Functions
	Dredging for the primary purpose of obtaining material for fill, construction or beach feeding is not permitted, except when the material is necessary for the restoration of ecological functions or for emergency shoreline stabilization and flood protection measures. (9.)
Dredging and Dredge Material Disposal:	Depositing dredged materials in water areas shall be allowed only (a) for wildlife habitat improvement, (b) to correct problems of material distribution adversely affecting fish and shellfish resources, (c) for beach feeding, or (d) when the alternative of depositing materials on land is more detrimental to shoreline resources than depositing it in water areas. (10.)
Dredge Material Disposal (4.7.3)	Disposal within river channel migration zones is discouraged, and in limited instances when allowed, require a conditional use permit. This regulation is not intended to address discharge of dredge material into the flowing current of the river or in deep water within the channel where it does not substantially affect the geo-hydrologic character of the channel migration zone. (11.)

### 4.3.8 Fill

Historical fill activities along the lower reaches of rivers and the Columbia River have reduced ecological functions of these areas. The proposed SMP significantly limits potential for new fill activities waterward of the OHWM.

Table 4-13 Summary of potential impacts from fill material.

Functions	Potential Impacts to Functions
Hydrologic	Alteration of existing water runoff patterns due to topographical alterations.
	Alterations in the stormwater retention timing and infiltration due to the loss of vegetation.
Water Quality	Short-term and long-term increases in turbidity related to vegetation removal and soil disturbance.
	Reduced biofiltration of stormwater resulting from vegetation removal.
Vegetative/ Habitat	Loss of functions due to removal or disturbance.
	Increased water temperatures due to vegetation removal.

Table 4-14 Summary of key fill and excavation regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and Modification Matrix (4.2)	Fill upland of the OHWM is a conditional use in the Conservancy, Rural, and Community environments and is an allowed use in the Urban/Industrial environment. See SMP table 4.2 for details.
Fill (4.7.4.B.)	Filling may be permitted only when it is in conformance with an approved site development plan. (2.)
	Pier or pier supports shall be utilized whenever feasible in preference to filling. (3.)

Location in SMP	Key Provision Providing Protection of Ecological Functions
	Filling shall not be permitted in marshes, bogs, and swamps for the purpose of residential development. Where such features exist within proposed subdivisions, they shall be retained as open space. (4.)
	Filling activities are not permitted within environmentally sensitive areas, except for approved beach restoration or enhancement programs. (5.)
	Environmental review of proposed filling shall be accomplished concurrently with review of the intended use, and threshold determination concerning the need for an environmental impact statement shall be based on this combined project review. (6.)
	All perimeters of fills and grading shall be revegetated and/or protected from erosion by retaining walls, or other effective measures. Soil disturbed in permitted grading and/or filling shall be so protected that it will not be washed downstream during high water. (8.)
	Fill materials shall be of such quality that it will not cause problems of water quality. Shoreline areas are not to be considered for sanitary landfills or disposal of any solid waste material. (9.)
	Fill waterward of the OHWM is allowed only by a shoreline conditional use permit for public access, a water-dependent use, clean-up and disposal of contaminated sediments, disposal of dredged material in accordance with WDNR Dredged Material Management Program, Expansion or alteration of transportation facilities of statewide significance currently located within an SMA, or environmental restoration/mitigation. (10.)

### 4.3.9 Forest Management Practices

Ongoing forest practices are not regulated under the SMP. The conversion of existing forest uses to non-forest uses is anticipated to occur more commonly than new forest uses. However, since development pressure is limited, as described in Section 3, these forest conversions are also not commonly anticipated.

Table 4-15 Summary of potential impacts from forest management practices.

Functions	Potential Impacts to Functions
Hydrologic	Reduced infiltration associated with forestry actions resulting in flashier hydrology.
	Increase in stormwater runoff and discharge in association with more impervious surfaces from non-forestry uses following conversion.
Water Quality	Increased erosion from removal of trees.
	Greater potential for increased erosion, bank instability, and turbidity associated with vegetation clearing.
	Increase in contaminants associated with the creation of new impervious surfaces (e.g. metals, petroleum hydrocarbons) for non-forestry uses following conversion.
Vegetative/	Reduction in forest cover associated with conversion of lands from forestry uses.

Habitat	Loss of or disturbance to riparian habitat during upland development.
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Table 4-16 Summary of key forest practices regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and Modification Matrix (4.2)	This activity has policies established by the State Forest Practices Act (WAC 222) administered by Department of Natural Resources (DNR). Modifications within forestry-designated lands are done through the DNR permit process. Enforcement of State Forest Practice Act policies is done in cooperation with the U.S. Forest Service and Columbia River Gorge commission (WAC 222-46). This use is permitted in all but the Natural environment designation.
Forest Practices (4.5.3.B)	Forest management practices shall comply with the regulations established by the Washington State Forest Practices Act (RCW 76.09). Where proposed forest practices in shoreline jurisdiction would fall under the applicability of the Forest Practices Act, the local jurisdiction shall consult with the DNR regarding permitting. (1.)
	Conversion of forest lands to any other use shall result in no net loss of shoreline ecological functions or significant adverse impacts to other shoreline uses, resources and values, such as navigation, recreation and public access. (2.)
	The harvest of timber within shoreline jurisdiction associated with a shoreline of statewide significance shall be required to comply with the selective cutting requirements of RCW 90.58.150. (3.)

### 4.3.10 Ports & Industrial Development

Industrial development is generally limited throughout the county, and where it does occur, it is concentrated in areas designated as Urban/Industrial environments. Future development of new industrial uses in shoreline jurisdiction is expected to remain infrequent, and given SMP preferences, water-dependent uses are expected to be most common. Future industrial development is expected to occur in those areas designated as Urban/Industrial environments.

Table 4-17 Summary of potential impacts from industrial development.

<b>Functions</b>	<b>Potential Impacts to Functions</b>
Hydrologic	Increase in stormwater runoff and discharge in association with more impervious surfaces.
	Disruption of shoreline wetlands.
Water Quality	Increase in contaminants associated with the creation of new impervious surfaces (e.g. metals, petroleum hydrocarbons).
	Water quality contamination from use and storage of toxic substances.
	Greater potential for increased erosion, bank instability, and turbidity associated with vegetation clearing.
Vegetative/ Habitat	Reduced shoreline habitat complexity, increased water temperatures, and less LWD.
	Loss of or disturbance to riparian habitat during upland development.
	Lighting effects on both fish and wildlife.

Table 4-18 Summary of key industrial development regulations that protect ecological functions.

<b>Location in SMP</b>	<b>Key Provision Providing Protection of Ecological Functions</b>
Environment Designations – Shoreline Use and Modification Matrix (4.2)	Industrial development is a conditional use in certain circumstances within the Community shoreline environment. It is a permitted use within the Urban/Industrial except when it is a non-water oriented use where a conditional use permit would be required.
Industrial Development (4.6.2.B)	Parking and loading facilities shall be placed inland, away from the water's edge, and shall not be permitted in set-backs or side areas. (1.)
	Prospective industrial projects shall be thoroughly investigated to forestall any enterprise which might degrade or substantially pollute a waterway or local environment. (2.)
	All industrial development shall include sewage facilities in compliance with County Health Standards. (3.)
	Approved landscaping for screening and blending with the environment shall be a part of industrial construction requirements. (5.)
	Waste treatment ponds for water-related industry shall not be located within shorelines area. (7.)
	All fuels, chemicals, and toxic substances shall be kept, stored, handled and used in a fashion which assures that there will be no opportunity for contamination of waters. (8.)
	Industrial development shall be located, designed, and constructed in a manner that assures no net loss of shoreline ecological functions and such that it does not have significant adverse impacts to other shoreline resources and values. (15.)

### 4.3.11 In-Stream Structures

Two Dams, The Dalles and John Day Lock & Dam exist within the shoreline jurisdiction of Klickitat County. The modification and repair of existing dam and diversion infrastructure could be anticipated on an infrequent basis; however, new dams are generally not anticipated.



Various culverts and irrigation diversion structures also exist, associated with transportation facilities and agricultural activities. Regulations need to accommodate anticipated new diversion structures, and repair/maintenance and possible expansion of existing projects.

Table 4-19 Summary of potential impacts from in-water structures.

Functions	Potential Impacts to Functions
Hydrologic	Alteration in flows.
Water Quality	Effects to circulation and associated changes in water quality.
Vegetative/ Habitat	Migration barriers and stranding potential for aquatic species.
	Instream habitat alterations.

Table 4-20 Summary of key in-water structure regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and Modification Matrix (4.2)	In-stream structures are a permitted use in all environment designations.
In-water Structures (4.6.3.B)	The location and planning of in-stream structures shall give due consideration to the full range of public interests, including, but not limited to, watershed functions and processes, and environmental concerns, with special emphasis on protecting and restoring priority habitats and species. (1.)
	In-stream structures shall provide for the protection and preservation of ecosystem-wide processes, ecological functions, and cultural resources, including, but not limited to, fish and fish passage, wildlife and water resources, shoreline critical areas, hydrogeological processes, and natural scenic vistas. (2.)
	Stream control works shall allow for normal ground water movement and surface runoff flow into a streamway. (3.)

### 4.3.12 Mining

Only one existing gravel mine was noted in the Shoreline Analysis Report, just west of the unincorporated community of Wishram. Mining is not a commonly anticipated land use in shoreline jurisdiction.

Table 4-21 Summary of potential impacts from mining.

Functions	Potential Impacts to Functions
Hydrologic	Alteration in hydrologic and sediment processes potentially leading to erosion, channel incision, head cutting, and/or channelization of a river upstream or downstream from the mining location.
	Loss of floodplain habitat associated with armoring and levees to isolate pits from the river channel.
Water Quality	Reduction in water quality from turbidity and dredge material disposal.

Functions	Potential Impacts to Functions
Vegetative/ Habitat	Disruption of benthic community.
	Simplification of in-channel habitats.
	Potential to strand fish during pit capture events.

Table 4-22 Summary of key mining regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and Modification Matrix (4.2)	Mining is a conditional use in the all upland environment designations except in the natural designation, where it is prohibited.
Mining (4.5.4.B)	Operations for the production of sand, gravel, rock, and minerals shall be done in conformance with all federal, state, and local regulations. (1.)
	All mining activities undertaken below the ordinary high water line must also comply with dredging policies and regulations contained in this Program. (2.)
	Mining within the active channel or channels waterward of a river’s ordinary high-water mark shall not be permitted unless: removal of sand and gravel material will not adversely affect the natural processes of gravel transportation for the river system as a whole and permitted mining activities will not have significant adverse impacts to habitat for priority species nor cause a net loss of ecological functions of the shoreline. (2.a. and 2.b.)
	Mining proposals shall include types and quantities of materials to be mined; mining technique; existing and proposed drainage patterns; proposed minimization measures for runoff and erosion; location and sensitivity of any affected flood hazard areas and subsurface water resources; quality of and plan of disposal for excavation material and tailings storage, usage, or disposition. (3.a., 3.b., 3.c., 3.g., 3.h., 3.i., 3.j., 3.k.)
	Operations shall utilize effective techniques to prevent or minimize surface water runoff, erosion and sedimentation; prevent reduction of natural flows; protect all shoreline areas from acidic or toxic materials; and maintain the natural drainage courses of all streams. Surface water runoff shall be impounded as necessary to prevent accelerated runoff and erosion. (4.)
Mining (4.5.4.B)	Mining operations shall provide maximum protection for anadromous fishery resources, including, but not limited to, limitations on the periods of the year during which mining activities may occur. (6.)
	If substantial evidence indicates that mining operations are causing, or a continuation of operations would cause, significant adverse impacts to water quality or to the geo hydraulic functioning of a river, the County may terminate a mining permit or impose further conditions on a mining operation. (7.)
	Adequate precautions shall be taken to insure that stagnant or standing water, especially that of a toxic or noxious nature, does not develop, and that flooding and evaporation will not lead to the stranding of fish in open pits. (9.)
	A reclamation plan shall include the following provisions to be fulfilled within one

Location in SMP	Key Provision Providing Protection of Ecological Functions
	year of completed or abandoned operations: a) all equipment utilized for reclamation shall be removed from the site upon review and approval of the reclamation as required by state and local agencies; b) no stagnant or standing water shall be allowed to collect or remain except as provided in an approved site reclamation plan; c) back fill material shall be of natural, compatible materials; d) all overburden, waste, and nontoxic material storage piles and areas shall either be leveled, sodded and planted, or returned to the excavated area and sodded and planted; e) the site shall be rehabilitated to prevent erosion and sedimentation during and after reclamation. (12.)
	Suitable drainage systems approved by the County Engineer shall be installed and maintained if natural, gradual drainage is not possible. Such systems should collect, treat, and release surface runoff so as to prevent erosion and sedimentation. (13.)
	Revegetation shall consist of compatible, self-sustaining trees, shrubs, legumes or grasses. (17.)
	All toxic and acid-forming mining refuse and materials shall be either treated so as to be nonpolluting prior to onsite disposal, or removed and disposed of away from shoreline areas. (18.)

### 4.3.13 Outdoor advertising, signs, and billboards

Impacts from outdoor advertising, signs, and billboards in shoreline jurisdiction are primarily related to aesthetic and view impacts. Accordingly, policies in the SMP focus on preventing sign proliferation beyond existing structures, and regulating sign size and placement to minimize such impacts. Use and installation of signage in all shoreline environment designations shall be subject to the signage provisions in the Klickitat County Zoning Ordinance (SMP 4.6.4.B.1.).

Table 4-23 Summary of key recreational development regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and Modification Matrix (4.2)	Signs should be designed and placed so that size, height, illumination and other factors insure compatibility with the aesthetic quality and minimize visual obstructions of the existing shoreline, water environment, and adjacent land and water uses.
Outdoor Advertising, Signs, & Billboards (4.6.5.B)	All outdoor signs shall be designed to minimize impacts to aesthetics. When feasible, signs should be flush-mounted against existing buildings to minimize visual obstructions of the shorelines and water bodies. All outdoor advertising signs should, when practical, be placed on upland side of public transportation routes which parallel adjacent rivers, streams and lakes, to avoid obstructions. (2.)
	Signs in shoreline buffers and the Natural Environment shall be for the purpose of safety information and direction only. (4.)
	Off-premise outdoor advertising signs, displays, billboards, and/or roof-mounted signs are prohibited in all shoreline environments, EXCEPT off-premise free-standing signs may be permitted for community identification, information or directional purposes. Signs placed on trees or other natural features are also

Location in SMP	Key Provision Providing Protection of Ecological Functions
	prohibited. (5.)
	When a business moves or ceases operation, the owner shall remove all signs and outdoor advertising. (7.)

### 4.3.14 Recreational development

Several shoreline parks are located in Klickitat County. Development, replacement, and maintenance of park facilities should be anticipated.

Table 4-24 Summary of potential impacts from recreational development.

Functions	Potential Impacts to Functions
Hydrologic	Increase in storm water runoff and discharge in association with more impervious surfaces.
Water Quality	Increase in contaminants associated with the creation of new impervious surfaces (e.g. metals, petroleum hydrocarbons).
	Increase in pesticide and fertilizer use.
	Greater potential for increased erosion, bank instability, and turbidity associated with vegetation clearing.
Vegetative/ Habitat	Reduced shoreline habitat complexity, increased water temperatures, and less LWD.
	Loss of or disturbance to riparian habitat during upland development.
	Lighting effects on both fish and wildlife in nearshore areas.

Table 4-25 Summary of key recreational development regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and Modification Matrix (4.2)	Water-oriented recreational development and trails are permitted uses in all environments. General non-water-oriented recreational uses are a conditional use within all shoreline designations.
Recreation (4.6.7.B)	The design and development of recreational areas shall protect natural features of the land, its vegetation, wildlife, water quality, aquatic life and habitat, and take into account the biophysical capabilities of a site. Such development shall not result in a net loss of shoreline ecological functions or ecosystem-wide processes. (1.)
	In locating proposed recreational facilities such as playing fields, golf courses and other open areas which use large quantities of fertilizer and pesticides in their turf maintenance programs, provisions shall be made to prevent these chemicals from entering a water. If this type of facility is approved on a shoreline location, provision shall be made for protection of water areas from drainage and surface runoff. (4.)
	No recreational buildings or structures shall be built over the water. (5.)

Location in SMP	Key Provision Providing Protection of Ecological Functions
	Valuable shoreline resources and fragile or unique areas such as marshes, estuaries, and accretion beaches, shall be used only for non-intensive and non-structural recreation activities. (7.)
	Recreational developments shall provide facilities for non-motorized access to a shoreline such as pedestrian, bicycle and/or equestrian paths. (9.)
	Proposals for recreational development shall include plans for sewage disposal. Where treatment facilities are not available, the appropriate reviewing authority shall limit the intensity of development to meet city, county, and state on-site sewage disposal requirements. (10.)

### 4.3.15 Residential Development

Based on development forecasts (Section 3), the demand for new residential development is expected to be low. Relatively limited areas of new development and redevelopment may be anticipated near existing urbanized or developed areas.

As noted in Section 2.1.2, there are 26 existing floating homes on the North River, which will be allowed to remain under the SMP; however, new floating homes will be prohibited. An open water moorage plan will apply to the existing floating homes.

Table 4-26 Summary of potential impacts from residential development.

Functions	Potential Impacts to Functions
Hydrologic	Increase in stormwater runoff and discharge in association with more impervious surfaces.
Water Quality	Increase in contaminants (e.g. metals, petroleum hydrocarbons) and decrease in infiltration potential associated with the use and creation of new impervious surfaces.
	Water quality contamination from failed septic systems.
	Increase in pesticide and fertilizer use.
	Greater potential for increased erosion, bank instability, and turbidity associated with vegetation clearing.
Vegetative/ Habitat	Reduced shoreline habitat complexity, increased water temperatures, and less LWD.
	Loss or disturbance of riparian habitat during upland development.

Table 4-27 Summary of key residential development regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and Modification Matrix (4.2)	Overwater residences are prohibited in all environments. Single-family residential development is a conditional use in the Natural and Urban/Industrial environments.
Residential	New residential lots created through land division must be designed, configured

Location in SMP	Key Provision Providing Protection of Ecological Functions
Development (4.6.8.B.)	and developed to prevent the loss of ecological functions at full build-out and 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. (1.)
	New over-water residences are prohibited (WAC 173-26-241(3)(j)). (2.)
	Developments in flood hazardous areas shall only be allowed in accordance with Klickitat County Codes and ordinances, federal and state regulations and guidelines. (3.)
	Sewage disposal facilities and water supply facilities shall be provided in accordance with appropriate state and local health regulations. Storm drainage facilities may be required and shall be separate, not combined with sewage disposal systems. Storm drainage shall be treated both in terms of water quality and water quantity. (4.)
	Prior to issuance of a building permit or other development approval, the developer shall submit adequate plans for preservation of shore vegetation, for control of erosion during and after construction and for the replanting of the site after construction. Such plans shall be a part of the Substantial Development Permit, if one is required. (7.)
	All structures shall be setback from the ordinary high water line consistent with the shoreline buffers listed in Section 4.3 Dimensional Standards.(10.)
	Filling shall not be permitted in marshes, bogs, swamps for the purpose of residential development. Where such features exist within proposed subdivisions, retention as open space should be encouraged. (12.)

### 4.3.16 Shoreline Habitat and Natural Systems Enhancement Projects

Several planned shoreline restoration activities and projects were identified in the Shoreline Restoration Plan (TWC 2015). Implementation of many of these projects is expected to occur in the foreseeable future.

Table 4-28 Summary of potential impacts from restoration.

Functions	Potential Impacts to Functions
Hydrologic	Temporary changes to stream flow due to construction activities.
Water Quality	Short-term increases in turbidity related to construction activities.
Vegetative/ Habitat	Temporary loss of functions due to removal or disturbance.

Table 4-29 Summary of key restoration regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and	Restoration projects are permitted in all environments to establish, restore, and enhance habitat for priority species in shorelines.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Modification Matrix (4.2)	
Shoreline Habitat & Natural Systems Enhancement Projects (4.7.7.B.)	Shoreline habitat and natural system enhancement projects must be carried out in accordance with an approved shoreline restoration planning document, including, but not limited to, the Shoreline Restoration Plan prepared as part of the County's Shoreline Master Program(1.)
	Shoreline restoration and enhancement projects shall be designed using the most current, accurate, and complete scientific and technical information available, and implemented using best management practices. (2.)

### 4.3.17 Shoreline stabilization

Shoreline stabilization is located in many areas throughout the county, particularly along the Columbia River. Generally, the SMP provisions will limit new and expanded shoreline stabilization to areas where existing development requires stabilization measures. Although the SMP limits potential construction of new structures, which would be limited by SMP provisions, repair and replacement of existing structures should be anticipated.

Table 4-30 Summary of potential impacts from shoreline stabilization.

Functions	Potential Impacts to Functions
Hydrologic	Increase in flow energy at the shoreline resulting in increased bank erosion downstream.
	Disruption of shoreline wetlands.
	Reduction in floodplain connectivity.
Water Quality	Water quality impacts associated with construction.
	Removal of shoreline vegetation increases erosion and water temperatures.
Vegetative/Habitat	Simplification of shoreline habitat complexity.

Table 4-31 Summary of key shoreline stabilization regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and Modification Matrix (4.2)	New hard shoreline stabilization is a conditional use in the Conservancy, Rural, and Natural environments.
Shoreline Stabilization (4.7.6.B.)	New development must be located and designed to avoid the need for future shoreline stabilization to the extent feasible. (1.)
	Subdivision of land must assure that the lots created will not require shoreline stabilization in order for reasonable development to occur using geotechnical analysis of the site and shoreline characteristics. (2.)

Location in SMP	Key Provision Providing Protection of Ecological Functions
	<p>New development on steep slopes and bluffs shall be set back sufficiently to ensure that shoreline stabilization is unlikely to be necessary during the life of the structure, as demonstrated by a geotechnical analysis. (3.)</p>
	<p>New development that would require shoreline stabilization that causes significant impacts to adjacent or down-current properties and shoreline areas is prohibited. (4.)</p>
	<p>Soft approaches shall be used unless demonstrated not to be sufficient to protect primary structures, dwellings, and businesses. Hard armoring solutions will not be authorized except when a geotechnical report confirms that there is a significant possibility that a primary structure will be damaged within three years as a result of shoreline erosion in the absence of such hard armoring measures, or where waiting until the need is that immediate, would foreclose the opportunity to use measures that avoid impacts on ecological functions. Where a geotechnical report confirms a need to prevent potential damage to a primary structure, but the need is not as immediate as the three years that report may still be used to justify more immediate authorization to protect against erosion using soft measures. (7.)</p>
	<p>Any measures which result in stream channel clearing, modification, or channelization shall be avoided. River and stream channel direction modification, realignment, and straightening are prohibited unless they are essential to uses that are consistent with this program. (9.)</p>
	<p>The County shall require the following information during its review of shoreline stabilization proposals: River channel hydraulics and floodway characteristics up and down the stream from the project area; existing shoreline stabilization and flood protection works within the area; physical, geological and/or soil characteristics of the area; existing and proposed shoreline and water uses for the area; and predicted impact upon area shore and hydraulic processes, adjacent properties, and shoreline and water uses. (12.)</p>
	<p>New or enlarged structural stabilization measures shall not be allowed except as follows: a) to protect existing primary structures; b) in support of new non-water-dependent development, including single-family residences; c) in support of water dependent development; to protect projects for the restoration of ecological functions or hazardous substance remediation projects pursuant to RCW 70.105D, when need is demonstrated through a geotechnical report, nonstructural measures are not feasible or not sufficient, and stabilization will not result in a net loss of shoreline ecological function. (13.)</p>
<p>Shoreline Stabilization (4.7.6.B.)</p>	<p>Geotechnical reports pursuant to this section that address the need to prevent potential damage to a primary structure shall address the necessity for shoreline stabilization by estimating time frames and rates of erosion and report on the urgency associated with the specific situation. (14.)</p> <p>For 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. An existing shoreline stabilization structure may be replaced with a similar structure if design, location, sizing, and construction assures a no net loss of ecological functions; replacement walls abutting the existing shoreline structure do not encroach waterward unless the residence was occupied prior to January 1, 1992, and there are overriding safety or environmental concerns; and soft shoreline stabilization measures provide</p>



Location in SMP	Key Provision Providing Protection of Ecological Functions
	restoration of shoreline ecological functions are permitted waterward of the ordinary high-water mark. (15.)
	The County may require professional design of shoreline stabilization and flood protection works where such projects may cause interference with normal river geo hydraulic processes, leading to erosion of other upstream and downstream shoreline properties or adverse effects to shoreline resources and uses. (18.)
	Existing stream bank vegetation shall be preserved to the maximum extent feasible. (19.)
	New or expanded revetment or riprap systems, cut and fill slopes, and backfilled areas shall be planted with self-sustaining and soil stabilizing vegetation that is compatible with natural stream bank vegetation. (20.)
	Bank stabilization materials shall be clean, consist of rock or other earthen materials and be of a sufficient size to prevent them from being washed away by high water or wave action. No material should be taken from stream beds for these purposes unless specifically authorized under applicable permits and regulations. (21.)
	River shoreline stabilization shall, to the extent possible, be planned, designed, and constructed to allow for channel migration. These works shall not reduce the volume and storage capacity of rivers and adjacent wetlands or flood plains. (23.)
	All stabilization and protection works shall be constructed and maintained in a manner which does not degrade the quality of affected waters. The County may require reasonable conditions to achieve this objective, such as setbacks, buffers, or storage basins. (24.)
	The construction of bulkheads shall be permitted only to the extent necessary where they provide protection to upland areas or facilities. Bulkheads shall be constructed in such a manner as to minimize encroachment within the ordinary high water zone of streams and minimize damage to fish habitats. (27.)
	Bulkheads shall not be permitted for any purpose if they will cause significant adverse erosion or beach starvation. (31.)

### 4.3.18 Transportation Facilities

Several major highways, including US-97 and WA-142 as well as the BNSF railway run parallel to county shorelines. Smaller roads and forest roads also run parallel to and cross shoreline waterbodies. Continued development, replacement, and maintenance of existing transportation facilities should be anticipated.

Table 4-32 Summary of potential impacts from transportation and parking.

Functions	Potential Impacts to Functions
Hydrologic	Increase in stormwater runoff and discharge in association with more impervious surfaces
Water Quality	Increase in contaminants associated with the creation of new impervious surfaces (e.g. metals, petroleum hydrocarbons)
Vegetative/ Habitat	Greater potential for increased erosion, bank instability, and turbidity associated with vegetation clearing
	Fish passage impacts associated with stream crossings

Table 4-33 Summary of key transportation regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and Modification Matrix (4.2)	The Use and Modification Matrix (4.2) provides a detailed breakdown of transportation development activities which are permitted, conditionally permitted, or prohibited by shoreline environment designation in order to protect ecological functions. Please refer to SMP.
Transportation Facilities (4.6.9.B.)	Transportation and parking facilities and routes shall be planned, located and designed to have the least possible adverse effect on unique or fragile shoreline features, to not result in a net loss of shoreline ecological functions or adversely impact existing or planned water-dependent uses (WAC 173-26-241(3)(k)). (1.)
	All bridges and other water crossing structures shall be designed so as to not impede the passage of flood debris, not to alter normal stream passage, and not impede fish passage in fish bearing or potentially fish bearing water. (2.)
	All culverts within shoreline areas shall be designed for a 50-year flooding minimum and shall be installed on natural slopes, or flumed to flow on to stable ground, or into an energy dissipater prior to entry into a stream. (3.)
	All debris overburden and other waste material from construction shall be removed or distributed to restore a construction area to a state of natural or improved aesthetic value. (4.)
	New transportation facilities in shoreline areas shall be located and designed to minimize or prevent the need for shoreline protective measures such as riprap or other bank stabilization, landfill, bulkheads, groins, jetties, or substantial site regrading. (6.)
	Shoreline transportation facilities shall be designed to fit into the existing topography in order to minimize cuts and fills. (7.)
	Roads located in wetland areas shall be designed and maintained to prevent erosion and to permit the natural movement of ground waters. (8.)
	New sidetracks shall be designed to minimize disturbance to the shoreline. Justification must be provided that the proposal is the only feasible location; furthermore, that there are no alternative sites which would have less impact on the shoreline, while still meeting the project objective. All disturbed areas shall be revegetated with native grasses, shrubs, and trees to eliminate impacts to

Location in SMP	Key Provision Providing Protection of Ecological Functions
	erosion, aesthetics, and provide fish/wildlife habitat. Proposals that would impact wetlands shall comply with SMP Section 4.4.1, Ecological Protection and Critical Areas and Appendix B of the Shoreline Master Program. (12.)
	Parking facilities in shorelines shall be allowed only as necessary to support an authorized use and when environmental and visual impacts are minimized. Such facilities shall be located outside shoreline jurisdiction to the greatest extent feasible and shall be separated from the shoreline by vegetation, undeveloped space, a topographical barrier or another structure (13. & 15.)

### 4.3.19 Utilities

Maintenance of existing utility facilities should be anticipated. In addition, in order to address new demand in the City of Raymond and to improve service reliability throughout the county, the Klickitat County Public Utility District has plans for new major transmission lines. Some of these improvements may be located in shoreline jurisdiction.

Table 4-34 Summary of potential impacts from utilities.

Functions	Potential Impacts to Functions
Hydrologic	Where utilities require shoreline armoring, associated hydrologic impacts are likely. Erosion at stormwater outfall locations can alter sediment transport processes.
Water Quality	Potential for contaminant spill or leakage. Water quality impacts from waste and stormwater outfalls.
Vegetative/ Habitat	Greater potential for increased erosion, bank instability, and turbidity associated with vegetation clearing.

Table 4-35 Summary of key utilities regulations that protect ecological functions.

Location in SMP	Key Provision Providing Protection of Ecological Functions
Environment Designations – Shoreline Use and Modification Matrix (4.2)	The Use and Modification Matrix (4.2) provides a detailed breakdown of utilities development activities which are permitted, conditionally permitted, or prohibited by shoreline environment designation in order to protect ecological functions. Please refer to SMP.
Utilities (4.6.11.)	. Developments not required to obtain shoreline permits or other local reviews under the Shoreline Management Act are listed under WAC 173-27-044 and WAC 173-27-045. Such developments include certain remedial actions; boatyard improvements; WSDOT facility improvements; projects consistent with an environmental excellence program agreement and projects authorized through the Energy Facility Site Evaluation Council process. (1.) Upon completion of installation and/or maintenance projects, shorelines shall be restored to pre-project configuration, replanted with native species, and provided maintenance care until the newly planted vegetation is established. (2.)

Location in SMP	Key Provision Providing Protection of Ecological Functions
	Applications for installation of utility facilities shall include: reason(s) why the utility facility requires a shoreline location; plans for reclamation of areas disturbed during construction; erosion and turbidity control during construction; description of how the design, location, and maintenance will result in a no net loss of ecological functions. (3.)
	Non-water depended utilities are prohibited in shoreline areas unless it can be shown that no alternatives are feasible. (5.)
	Utility facilities shall be located to avoid destruction of or damage to marshes, bogs, and swamps; critical wildlife areas; and other unique and fragile areas except where it is demonstrated that no feasible alternatives exist. (7.)
	Utility facilities requiring withdrawal of water from streams or rivers shall be located only where minimum flows, as established by the Washington State Department of Fish and Wildlife, can be maintained. (8.)
	Construction of utilities under water or in adjacent wetlands shall be timed to avoid major fish migratory runs. (10.)

#### 4.4 Shoreline Restoration Plan

One of the key objectives that the SMP must address is “no net loss of ecological functions necessary to sustain shoreline natural resources” (Ecology 2011). Although the implementation of restoration actions to restore historic functions is not required by SMP provisions, the SMP Guidelines state that “master programs shall include goals, policies and actions for restoration of impaired shoreline ecological functions. These master program provisions should be designed to achieve overall improvements in shoreline ecological functions over time, when compared to the status upon adoption of the master program” (WAC 173-26-201(2)(f)).

The Shoreline Restoration Plan (TWC 2019) represents a long-term vision for restoration that will be implemented over time, resulting in a gradual improvement over the existing conditions. Although the SMP is intended to achieve no net loss of ecological functions through regulatory standards alone, practically, an incremental loss of shoreline functions at a cumulative level may occur through minor, exempt development; illegal development; failed mitigation efforts; or a temporal lag between the loss of existing functions and the realization of mitigated functions. The Shoreline Restoration Plan, and the voluntary actions described therein, can be an important component in making up that difference in ecological function.

Major Shoreline Restoration Plan components that are expected to contribute to improvement in ecological functions in the foreseeable future are summarized below:

- Site-specific projects to restore ecological processes. General objectives and strategies of such projects include:
  - Improving fish passage through upgrading or decommissioning of roads and culvert removal;
  - Replanting of riparian corridors and removal of invasive vegetation;

- Improving habitat complexity through placement of large woody debris and restoration of wetlands and off-channel habitat;
- Improving water quality through implementation of TMDL recommendations, cleanup of contaminated sediments, reduction of impervious surfaces, and reduction of sediment loading; and
- Working with landowners to control livestock access.
- Where existing systems are largely intact, focusing on protecting those intact processes and functions;
- Identification of restoration partners and funding sources to facilitate implementation of projects;
- Tracking restoration and protection projects through Habitat Work Schedule and the Washington State Conservation Commission’s Conservation Practice Data System; and
- Outreach and education measures that help inform and engage the public to make voluntary actions that limit degradation and/or improve shoreline functions on the approximately 52 percent of County shorelines that are privately owned.

The implementation of projects identified in Table 4-3 of the Shoreline Restoration Plan will help improve hydrologic, habitat, vegetation, and water quality functions.

## 5 EFFECTS OF OTHER REGULATORY PROGRAMS

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This chapter describes the beneficial effects that other regulatory programs may have on the County’s shorelines.

### 5.1 County Regulations and Programs

#### 5.1.1 Critical Area Regulations

County regulations applicable to critical areas are detailed in Appendix B of the SMP. These regulations were last updated in 2013. The updated regulations apply to wetlands, fish and wildlife habitat conservation areas (including streams) as identified in part by WDNR and WDFW Priority Habitat Species lists, geologically hazardous areas as identified in part by NRCS, critical aquifer recharge areas, and frequently flooded areas outside of shoreline jurisdiction.

#### 5.1.2 Zoning Code

Ordinance No. 62678 as amended June of 2015 provides County zoning standards that more specifically direct uses, building bulk, scale, density, and other design considerations. The zones generally correspond with the Comprehensive Plan designations, and minimum lot sizes are dictated through the Comprehensive Plan land use designations.

### **5.1.3 Columbia River Gorge Commission**

Approximately 292,500 acres of public and private lands surrounding the Columbia River Gorge are designated as a National Scenic Area. The U.S. Forest Service administers the Management Plan for the Scenic Area, and manages all National Forest System lands within its boundaries. The Management Plan is a non-regulatory document that provides recommendations for land use management. New land uses within the Columbia River Gorge National Scenic Area are reviewed for consistency with local land use ordinances that apply to non-Forest Service lands within the Scenic Area. In some jurisdictions, this review is done by the applicable county planning department. However, in Klickitat County, the Gorge Commission reviews the land use applications for National Scenic Area lands and makes a decision prior to the County acting on any land use decisions.

## **5.2 Tribal Regulations and Programs**

The Yakama Reservation is approximately 100 square miles in size within the County. As a sovereign nation, the Yakama Tribe has its own zoning and environmental provisions that apply within the reservation.

## **5.3 State Agencies/Regulations**

### **5.3.1 Washington Department of Natural Resources (WDNR)**

WDNR is charged with protecting and managing use of State-owned aquatic lands for revenue, outdoor recreation, and habitat for native fish and wildlife. Water-dependent uses waterward of the OHWM require review by WDNR to establish whether the project is on State-owned aquatic lands. Certain project activities, such as single-family or two-party joint-use residential piers, are exempt from these requirements. WDNR also implements and enforces the Forest Practices Act and Surface Mining Act (see sections 5.3.4 and 5.3.5 below).

### **5.3.2 Washington Department of Ecology**

The Washington Department of Ecology (Ecology) may review and condition a variety of project types, including any project that needs a permit from the U.S. Army Corps of Engineers (Corps), any project that requires a shoreline conditional use permit or shoreline variance, and any project that disturbs more than one acre of land. Project types that may trigger Ecology involvement include pier and shoreline modification proposals and wetland or stream modification proposals, among others.

### **5.3.3 Washington Department of Fish and Wildlife**

Chapter 77.55 RCW (the Hydraulic Code) gives the Washington Department of Fish and Wildlife (WDFW) the authority to review, condition, and approve or deny “any construction activity that will use, divert, obstruct, or change the bed or flow of State waters.” Practically speaking, these activities include, but are not limited to, installation or modification of piers, shoreline stabilization measures, culverts, bridges and footbridges. These types of projects must

obtain a Hydraulic Project Approval from WDFW, which will contain conditions intended to prevent damage to fish and other aquatic life, and their habitats. In some cases, the project may be denied if significant impacts would occur that could not be adequately mitigated.

### **5.3.4 State Forest Practices Act**

Activities related to growing, harvesting, or processing timber are regulated under Washington's State Forest Practices Act (WAC 222) administered by WDNR. Forest practices regulated under the SMP are limited to conversions and other Class IV-General forest practices that will likely result in a conversion to non-forest uses, as well as selective timber cutting along shorelines of statewide significance (SMP Section 4.5.3)).

### **5.3.5 Surface Mining Act**

The Surface Mining Act is a reclamation law administered by WDNR that requires a permit for each mine that 1) results in more than three acres of min-related disturbance, or 2) has a high-wall that is both higher than 30 feet and steeper than 45 degrees. WDNR is responsible for reviewing and approving site reclamation plans to achieve the general goals of site restoration.

## **5.4 Federal Agencies/Regulations**

### **5.4.1 Clean Water Act**

Major components of the Clean Water Act include Section 404, Section 401, the National Pollutant Discharge Elimination System (NPDES), and Section 303(d).

Section 404 provides the Corps, under the oversight of the U.S. Environmental Protection Agency (EPA), with authority to regulate "discharge of dredged or fill material into waters of the United States, including wetlands." As applicable to the county's shoreline jurisdiction, this generally means that the Corps must review and approve most activities in streams and wetlands. These activities may include wetland fills, stream and wetland restoration, culvert installation or replacement, or others. The Corps requires projects to avoid, minimize, and compensate for impacts.

A Section 401 Water Quality Certification is required for any applicant for a federal permit for any activity that may result in any discharge to waters of the United States. States and tribes may deny, certify, or condition permits or licenses based on the proposed project's compliance with water quality standards. In Washington, Ecology has been delegated the responsibility by the EPA for managing implementation of this program.

The NPDES is similar to Section 401, and applies to ongoing point-source discharge. Permits include limits on what can be discharged, monitoring and reporting requirements, and other provisions designed to protect water quality. Examples of discharges requiring NPDES permits include municipal stormwater discharge, wastewater treatment effluent, or discharge related to industrial activities.

Section 303(d) of the Clean Water Act requires the state to develop a list of waters that do not meet water quality standards. A Total Maximum Daily Load, or TMDL, must be developed for impaired waters. Ecology is working with the county and other partners to implement water quality improvement projects as part of TMDLs.

#### **5.4.2 Rivers and Harbors Act, Section 10**

Section 10 of the federal Rivers and Harbors Appropriation Act of 1899 provides the Corps with authority to regulate activities that may affect navigation of “navigable” waters. Designated “navigable” waters in Klickitat County include:

- Columbia River
- Klickitat River (lower portions)
- White Salmon River

Proposals to construct new or modify existing over-water structures (including bridges), to excavate or fill, or to “alter or modify the course, location, condition, or capacity of” navigable waters must be reviewed and approved by the Corps.

#### **5.4.3 Federal Endangered Species Act (ESA)**

Section 9 of the ESA prohibits “take” of listed species. Take has been defined in Section 3 as, “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” Per Section 7 of the ESA, the Corps must consult with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service on any projects that fall within Corps jurisdiction (e.g. Section 404 or Section 10 permits, as described above) that could affect species listed under the ESA. These agencies ensure that the project includes impact minimization and compensation measures for protection of listed species and their habitats.

#### **5.4.4 Dredged Material Management Program**

Dredging projects typically involve multiple agencies at the local, state, and federal levels. Before applying for a permit, an applicant must obtain a Suitability Determination or other decision document from the interagency Dredged Material Management Program that evaluates the proposed project. Applicants for new dredging projects must also obtain permits from the Corps, Ecology, WDFW, and the local government with jurisdiction. As part of the Corps process, ESA consultation with the U.S. Fish and Wildlife Service will be conducted. If in-water disposal is proposed, a Site Use Authorization from WDNR is also required.

## **6 NET EFFECT ON ECOLOGICAL FUNCTIONS**

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This analysis indicates that the overall rate of anticipated development in Klickitat County is expected to remain relatively low in the foreseeable future. Development is likely to be



concentrated near existing developed areas and at port facilities. Agricultural, industrial, and forestry uses are expected to continue to predominate, with residential and recreational uses also being prevalent. Maintenance and repair of existing shoreline and aquatic facilities is also anticipated.

Irrespective of new land use changes, the county faces several challenges in maintaining shoreline functions. These include controlling non-native and invasive species; adapting to climate change; and managing the protection of private property rights along with implementing conservation strategies. The proposed Klickitat County SMP provisions were developed to address these risks to the extent possible and to compliment planned programs and restoration projects. The SMP is expected to maintain existing shoreline functions within Klickitat County while accommodating reasonably foreseeable future shoreline development. Other local, state, and federal regulations, acting in concert with the SMP, will provide further mechanisms and assurances of maintaining shoreline ecological functions over time. The Shoreline Restoration Plan, and the voluntary actions described therein, will ensure that incremental losses that could occur despite SMP provisions do not result in a net loss of functions.

As discussed in previous sections, major elements of the SMP that help ensure no net loss of ecological functions fall into four general categories: 1) environment designations; 2) general policies and regulations; 3) critical areas regulations; and 4) shoreline use and modifications regulations. The Shoreline Restoration Plan identifies ongoing and planned voluntary restoration that will provide an opportunity to improve shoreline conditions over time.

Environment designations: Shoreline environment designations were assigned to shorelines to minimize use conflicts and designate appropriate areas for specific uses and modifications (SMP Section 3).

General provisions: SMP Section 4 contains general policies and regulations designed to maintain shoreline ecological functions. These regulations apply to all shoreline uses and modifications, and they provide the basis for achieving no net loss of shoreline ecological functions, such as mitigation sequencing, critical areas and flood hazard regulations, and vegetation conservation standards.

As a slower growing county, Klickitat County chose not to “opt in” to the Washington State 1990 Growth Management Act (GMA) and consequently was required to comply with minimum GMA requirements which includes the designation of agricultural, forest, and mineral resource lands and adoption of critical area development regulations. In 2013, the county updated their existing Critical Areas as adopted under Ordinance O080613 to align with best available science. Proposed buffers relating to Natural and Conservancy shoreline environment designations are generally consistent with average existing regulations on developed parcels in each environment. The critical area protection standards (SMP 4.4.1) ensure that vegetated buffers are retained on wetlands, fish and wildlife habitat conservation areas (including all shorelines), and geologically hazardous areas. The county’s flood hazard

regulations require that vegetation, flood capacity, and water quality are maintained, and that where feasible, buildings are located outside of the floodway as shown on FEMA Flood Insurance Rate (FIRM) maps. Combined, these regulations help ensure that the most sensitive areas of the county's shorelines are protected.

Shoreline use and shoreline modification: SMP Section 4 contains a number of policies and regulations that contribute to the maintenance of ecological functions. Shoreline uses and modifications were individually determined to be permitted, conditionally permitted, or prohibited in each environment designation (SMP Section 4, The Use and Modification Matrix (4.2)). More uses and modifications are permitted in those areas with higher levels of existing disturbance, and allowed uses and modifications are more limited in areas with lower levels of disturbance. Regulations prohibit uses that are incompatible with the existing land use and ecological conditions, and emphasize appropriate location and design of various uses.

Shoreline Restoration Plan: The Shoreline Restoration Plan identifies a number of project-specific opportunities for restoration on both public and private properties inside and outside of shoreline jurisdiction, and also identifies ongoing county programs and activities, restoration partners, and recommended strategies and actions consistent with a variety of watershed-level planning efforts.

Given the provisions and key features described above, implementation of the proposed SMP is anticipated to achieve **no net loss of ecological functions in the shorelines of Klickitat County**. Voluntary actions identified and prioritized in the Shoreline Restoration Plan will provide the opportunity to enhance and restore shoreline functions over time.

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