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# Hood Canal Summer Chum Recovery in Jefferson County

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## I. Summary Inventory of Pertinent Land Use Controls

As a part of the overall recovery of summer chum salmon, Jefferson County has reviewed its land use regulations and policies to determine the impact to summer chum salmon recovery in Eastern Jefferson County. The review of pertinent land use policies and regulations includes a brief description followed by an analysis of strengths and weaknesses relating to recovery of summer chum salmon.

In Jefferson County, many land use policies and regulations relate to the protection and enhancement of salmonids. This review focuses on those regulations that have been analyzed and determined to have the most direct impacts to summer chum salmon habitat.

Jefferson County Ordinances and Policies to be subject to this review include:

- Jefferson County Comprehensive Plan
- Shoreline Management Master Program
- Unified Development code (Ordinance No. 03-0702-01)
- Flood Damage Protection Ordinance (18-1120-95)
- Forest Lands Ordinance (No. 01-0121-97)
- Interim Timber Conversion Policy (Resolution 37-90)
- Agricultural Lands Ordinance (No. 08-0525-95)
- Mineral Lands Ordinance

### Jefferson County Comprehensive Plan

The Jefferson County Comprehensive Plan serves as a tool for long-term planning in the county. The Comprehensive Plan does two main things. First, it sets the overall zoning for Jefferson County (Figure 1). There are areas identified for urban development, rural development and resource usage. Secondly, the Comprehensive Plan provides policy guidance on the goals that should be attained with specific land use regulations. The Comprehensive Plan contains environmentally protective language throughout the document that provides direction for Jefferson County to be protective of ESA-listed species and fish habitat. The goals and policies in the Comprehensive Plan can serve as a basis for adopting, implementing or amending ordinances to be more protective of the environment.

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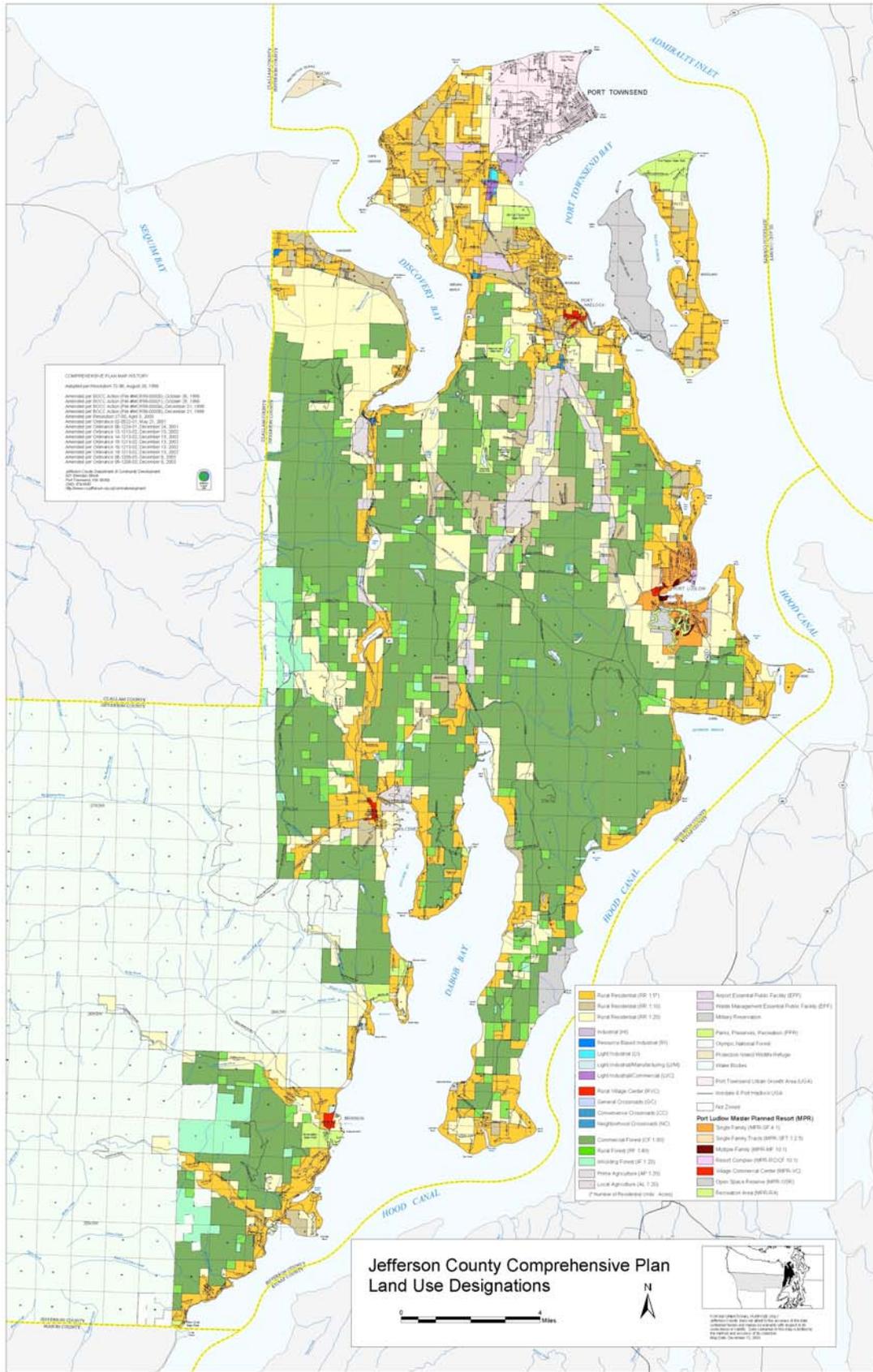


Figure 1.

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### Shoreline Management Master Program

The Shoreline Management Master Program (SMP) also serves as a tool for long-term planning in the county. However, the SMP also contains specific performance standards to implement the program. It contains both the policy and the implementation tools within one document. The SMP also contains provisions for enforcement that include liability for damages, monetary penalty and/or incarceration when an individual is found guilty of violating the code provisions.

The SMP contains language that provides direction for Jefferson County to balance the uses and needs of the shorelines, which include marine shorelines and larger rivers that are defined as “shorelines of the state.” The SMP gives clear direction to prioritize “statewide interest” over other goals. It also states that preservation of the “natural character” and protection of the “resources and ecology” of the shorelines should be prioritized over public access and recreation.

### Unified Development Code

In December 2000, Jefferson County adopted the Unified Development Code (UDC). The UDC was adopted with two main objectives. First, the goal was to implement the adopted Comprehensive Plan through regulations that reflected the goals and policies articulated in the plan. Second, in the development of the UDC, Jefferson County attempted to put all relevant development ordinances into a single body of text, which would ensure better consistency and integration.

In general, the standards in the UDC are much more environmentally protective than the previous Critical Areas Ordinance, which were incorporated into the body of the UDC. The standards were strengthened based on a review of the Best Available Science for wetland buffers, wetland replacement ratios, and fish and wildlife habitat requirements.

Another benefit for summer chum habitat protection from the adoption of the UDC was the streamlining of enforcement. The enforcement provisions are detailed in Chapter 10 of the UDC. Basically, the language is unambiguous, stating, “Provisions of this UDC will be enforced for the benefit of the health, safety, and welfare of the general public and the environment” (UDC Section 10.3). The primary goal is to achieve compliance with the codes, however, enforcement procedures are spelled out in UDC Section 10.6.

### Flood Damage Prevention Ordinance

The purpose of the Flood Damage Prevention Ordinance is to “promote the public health, safety and general welfare, and to minimize public and private losses due to flood conditions in specific areas”. This ordinance is not focused on habitat protection, but on human health and public safety protection. However, as a part of the overall goal, it does have provisions to control alterations of natural flood plains and stream channels to reduce the potential for flood impacts to occur elsewhere.

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### Forest Lands Ordinance and Interim Timber Conversion Policy

The focus of the Forest Lands Ordinance is on designating forest lands and not on forest practices. Currently, most all forest practices are regulated by the Washington State Forest Practices Act. The one exception is in the case of a Class IV general forest conversion, the County provides the SEPA analysis.

Jefferson County Resolution No. 37-90, Interim Timber Conversion Policy, sets forth policy on timber conversions. The policy includes a requirement that anyone considering conversion of forest lands to a non-forest use must submit a conversion option harvest plan to address environmental and land use issues. This resolution does have protection standards associated with the conversion of forestry lands to residential land uses.

### Agricultural Lands Ordinance

The Agricultural Lands Ordinance is focused on designating and conserving agricultural land. Standards required for agricultural activities are found in the environmentally sensitive area protections in the UDC Section 3.6.8.g.(5)v.

### Mineral Lands Ordinance

The Mineral Lands Ordinance focuses on protecting the economic viability of mining operations and resource lands for further development and not on protecting the environment from the adverse impacts of mineral lands operations.

The Mineral Lands Ordinance is primarily a “designation” ordinance and not a minimum standard-of-practice ordinance. Impacts to ESA-listed species on mineral lands would be addressed through the UDC or SEPA. Designation of land as mineral resource land is a requirement of the Growth Management Act, as rural resource lands are intended to be preserved for the extraction of the resources. The extraction of resources may impact summer chum habitat, but the overall SEPA analysis of individual project proposals is required to identify mitigations to protect salmon, including summer chum.

### **Impact on Channel Conditions and Riparian Conditions**

Channel conditions and riparian conditions are affected by land uses including forestry, agriculture, road and levee building, residential and commercial development. Current channel conditions are a function of both the historical and current land use practices.

Jefferson County’s ordinances and policies will now be evaluated in detail as they relate to the recovery of Hood Canal summer chum salmon, and in particular in this section to the impact on channel and riparian conditions.

Summer chum salmon utilize the lower sections of rivers and streams in eastern Jefferson County, generally from the mouth to 2 miles upstream. Although typically summer chum generally do not use the rivers beyond the low gradient lower reaches, the summer chum salmon do depend a great deal on complex floodplain habitat that historically has been found in the

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lower reaches. This has several consequences that are discussed in detail later, especially regarding the estuaries.

Specific regulations and the impact on channel and riparian condition are discussed below.

### Comprehensive Plan

Zoning: The Comprehensive Plan zoning directly impacts channel and riparian conditions. Prior to the Comprehensive Plan, the County zoning allowed for a high density (up to 1 home per acre) of residences in the watersheds of summer chum streams and rivers. Prior to the Comprehensive Plan, there was a greater potential for commercial and industrial development to occur in areas that might impact summer chum habitat. The Comprehensive Plan reduced Commercial zoning by approximately 75% and industrial zoning was limited to areas outside of the watersheds supporting summer chum.

Zoning controls were established in the Comprehensive Plan in 1998, and were amended most recently in 2002. A new Urban Growth Area in the Chumacum Creek watershed was approved in the 2002 amendments. Also, the Brinnon Sub-Area plan was approved. With these two zoning amendments in 2002, Jefferson County allows higher intensity development, such as commercial projects. The impact of these changes are addressed more specifically in Section III and Section IV of this analysis, where future development impacts are analyzed in the context of summer chum recovery.

Policies: Comprehensive Plan policies support maintaining and restoring good channel conditions. Environmental Goals promoting healthy channel and riparian conditions include ENG 11.0, ENG 12.0, ENG 13.0 and ENG 14.0, plus numerous policies and strategies to implement those goals. It is clear that the Comprehensive Plan directs Jefferson County to protect channel and riparian conditions for summer chum, as well as other salmonids.

### Shoreline Management Master Program

The specific standards in the Shoreline Management Master Program (SMP) have not been updated in more than 10 years. Although Jefferson County is currently working on updating the program, in all cases, more protective standards for Environmentally Sensitive Areas are found in the UDC. The more restrictive (environmentally protective) standard applies when two different standards are found in applicable in environmentally sensitive areas, which include freshwater and marine shorelines (UDC Section 3.6.4.d). Thus, while more protective habitat standards could be enacted in the SMP, they would not impart additional “on the ground” protections for channel and riparian conditions.

### Unified Development Code

Many of the protection standards in County land use rules that directly influence riparian and channel conditions are found in the UDC. The UDC spells out in detail what activities are exempt from permitting requirements (such as normal lawn maintenance), which activities require a formal “permit exemption” process (such as the establishment of protective bulkhead),

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and which activities require a permit (such as building a house). In many cases, standards must be followed that protect channel and riparian conditions.

Areas which were previously designated as “Critical Areas” in the “Critical Areas Ordinance” were reassigned the designation of “Environmentally Sensitive Areas” when the UDC was adopted in 2000.

The UDC defines “Environmentally Sensitive Area” overlays to include:

- Critical Aquifer Recharge Areas
- Frequently Flooded Areas
- Geologically Hazardous Areas
- Fish and Wildlife Habitat Areas
- Wetlands

The UDC details protection standards for environmentally sensitive areas that impact summer chum salmon habitat including the requirement for buffers to Fish and Wildlife Habitat Areas, Wetlands, and Geologically Hazardous Areas. In addition, there are limitations on the kinds of development activities allowed in Critical Aquifer Recharge Areas and Frequently Flooded Areas.

The most commonly scrutinized and discussed protective standard in the UDC that impacts channel and riparian conditions is the requirement for a riparian buffer. In general, riparian and wetland buffers were increased when the UDC was adopted in December 2000, based on a review of the scientific literature.

Standard riparian buffers are based on DNR stream typing, which is detailed in WAC 222-16-030. The standard riparian buffers are in UDC Section 3.6.8.g.(5)v.:

Type 1	150'
Type 2	150'
Type 3	100'
Type 4	100'
Type 5	50'

The standard wetland buffers are as follows:

Category I	150'
Category II	100'
Category III	50'
Category IV	25'

Other regulatory controls in the UDC that protect channel and riparian conditions, that help promote summer chum recovery, include:

- Stream crossings must be avoided whenever possible. When allowed, crossings are restricted as per Section 3.6.8.e (1). More specifically for summer chum habitat, stream crossings are severely restricted over streams with anadromous salmonids.

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- No new lots are allowed to be created that do not comply with the standard buffers (Section 3.6.8.e (2)). Thus, the only exemptions to buffer setbacks will occur for lots that were created prior to the UDC being adopted.
- Restrictions for placing utilities in a buffer are found in Section 3.6.8.e (3).
- Bank stabilization is only allowed when an applicant proves that “bioengineered” protection cannot be used as per Section 3.6.8.e (4). This reduces the amount of “bank armoring” that simplifies and degrades channel condition.
- Gravel mining is discouraged. It is allowed only when impacts can be completely mitigated, as per Section 3.6.8.e (5).
- Even if an activity does not require a permit (such as landscaping), if the activity alters the function of the buffer, it is not allowed as per Section 3.6.8.f. Activities specifically listed include soil grading or filling, clearing of vegetation, or construction of any building or structure.
- A drainage and erosion control plan and grading plan are required when activities occur in the Environmentally Sensitive Areas (Section 3.6.8.g).
- Overall, obtaining a reduction from the standard required buffer can only be allowed up to 25%. This can only happen with the submittal of an approved Habitat Management Plan and only on lots that pre-existed prior to the adoption of the UDC (Section 3.6.8.g (6)).
- Impervious Surface Limitations reduce the potential hydrologic and water quality impact on streams and rivers. In forest and agricultural designated lands, the maximum impervious surface is 10% of the parcel. More importantly, in the rural residential districts, the limitation is 25% of impervious surface per parcel (Detailed in Table 6-1 of Section 6.5).

The following list of actions/permits are required to comply with the Unified Development Code “Environmentally Sensitive Area” overlay (Section 3.6.4.d). Thus an applicant applying for any of these permits must meet buffer (setback) requirements and other protection standards.

- Clearing and Grading Permit
- Site Plan Approval
- Sewage Disposal
- Subdivision or Short Subdivision
- Binding Site Plans
- Building Permit
- Planned Residential Development
- Shoreline Substantial Development Permit
- Variance
- Conditional Use Permit
- Class IV General Forest Harvest Permit
- Class III Conversion Harvest Option Plan
- Zoning changes

Many projects have multiple permit applications. For instance, a building permit, septic permit and a clearing and grading permit are all required to build a single-family residence. The conditions on each of those permits would require protection of environmentally sensitive areas as is laid out in the UDC. The UDC also requires a “concurrency” review. The concept is truly

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the strength of the UDC, and there is a benefit from having all development codes in one document. The consistency review assures that property owners are not directed to plan their development in one phase that would cause problems during subsequent phases of their development.

### Analysis of UDC

The stream and wetland buffers for development setbacks were adopted in 2000, and updated in 2002. The review of scientific literature by County staff focused on identifying standards that would protect channel conditions and riparian buffers to protect channel conditions, and would be balanced with the rights of individual property owners to use their property. The 150 foot buffer that exists on summer chum spawning reaches provides near-natural levels of temperature control, sediment control, inputs of organic material, and streambed stability. About 90% of the large woody debris (LWD) and a substantial amount of nutrient reduction generally occurs in 150 foot buffers. Although the buffers are not ideal to fully protect all habitat-forming processes, they were adopted based on maintaining adequate fish and wildlife habitat conditions, including channel and riparian conditions, while balancing other goals of the Growth Management Act.

Because the current adopted stream buffers are relatively new (i.e., have been in-place for only three years), there is uncertainty as to the effectiveness to recover salmon habitat and PFC. Past land use practices have seriously degraded channel and riparian conditions. For instance, riparian buffers required for forestry activities were only recently strengthened with the adoption of the “Forest and Fish Plan”, which was codified into the Forest Practices Act (RCW 76.09). Many of the activities that have degraded stream channels have occurred upstream, on federal lands. For example, sediment aggradation has been noted as a significant impact to salmonid productivity in the Quilcene River system. This impact is the combination of forestry on the federal lands and development of dikes along the river that exacerbated the high sediment load from the watershed. Existing regulations will not address the continued impacts from these past practices. In some cases, active restoration, such as improvements to floodplains and riparian zones, will be needed to improve channel conditions and riparian vegetation.

There may be specific reaches of streams where the current UDC standards do not fully protect existing channel conditions and riparian functions. But as a whole, the current buffers should protect channel and riparian conditions from residential and commercial development. A key component to fully understand the impact of the County’s development regulations would be to monitor stream health over time. Such monitoring would include monitoring of the condition and composition of riparian vegetation and monitoring of in-stream channel conditions. Ongoing monitoring will also be useful to determine if the damage from historic land use practices is being “repaired” by natural processes, or if more direct restoration actions are necessary. Although the UDC does not direct county monitoring, Comprehensive Plan policies support ongoing assessment of cumulative impacts and collaboration in watershed management.

The standard riparian buffers may be increased for a number of reasons. The most likely would be evidence of active channel migration. However, the Channel Migration Zones (CMZs) are not currently mapped, although Jefferson County is working cooperatively with State, Federal

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and Tribal agencies to delineate the CMZ areas. The mapping will be completed in spring 2004, and associated regulations will be developed later in the year.

UDC Section 6.7 addresses the requirements for stormwater management. In 2002, Jefferson County amended its regulations to adopt the 2001 Department of Ecology Stormwater Management Manual for Western Washington. So far, Jefferson County is the only county in the State of Washington to adopt the manual. Improved stormwater management standards, and the requirement for maintaining 75% pervious surface for rural residential development will also contribute to promoting good channel conditions by maintaining natural river and stream hydrographs.

In general, the ordinance requires applicants conducting a wide range of activities to obtain a stormwater permit, and the County to review stormwater treatment plans. The new DOE stormwater manual increases the required stormwater detention to improve watershed hydrology, and promotes the use of “low impact development” standards. Currently, there are no identified areas of impact from stormwater on salmonid habitat or hydrologic function in the WRIA 16 LFA, WRIA 17 LFA or the Hood Canal Summer Chum Initiative.

Overall, the existing standards regarding stormwater treatment and limitations to impervious surfaces should protect channel conditions from damaging peak streamflows.

### Regulatory constraints for summer chum recovery

#### *1. Limitations of the environmentally sensitive area protections in the UDC include:*

General Exceptions (Section 3.6.4.e): this section provides for a general exception by the UDC Administrator, who generally is the Director of Community Development, with no specific requirements other than that, “the Administrator shall require that the proposed land or water use shall not create any unmitigatable significant adverse environmental impacts.” Although not stated, the use of Best Available Science is implied in this determination.

General Exemptions (Section 3.6.4.f): this section provides for general exemptions from Environmentally Sensitive Area requirements, including certain structural alterations. This is important for it may provide a limitation for summer chum recovery. Past land use practices, such as building setbacks, generally would not meet current protection standards. However, the exemption allows structures to be rebuilt if, for instance, destroyed by flood. The end result is that if existing development constrains recovery of summer chum salmon, active purchase of shoreline properties may be required for success.

Reasonable Economic Use Variance (Section 3.6.4.h): this section provides relief if Environmentally Sensitive Area requirements have eliminated all use of a property. However, this variance can only be issued if all applicable standards are met, including the Endangered Species Act.

Other limitations on the County’s current regulatory structure are the “one size fits all” buffer approach. Although used most everywhere in Washington State, the County’s approach where like stream types are all given the same regulatory protection is open to criticism. In many cases,

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there are important off-channel habitat features, where there is evidence of a migrating channel, or easily erodable alluvial soils. In these cases, County regulations may not be affording adequate protection on the particular site to protect salmonid habitat. However, it becomes challenging to regulate effectively site by site, and the regulatory structure is believed to be generally effective and supportive of summer chum salmon recovery, when viewed at a large scale across the watershed.

Another limitation may be in the stream typing system. The DNR stream typing that is used by Jefferson County is suspected to be inaccurate in some cases. There have been numerous documented instances of incorrect stream types assigned to smaller streams. However, there is no known mistyped summer chum spawning areas. The summer chum distribution will be shown in a Figure that will be developed in 2004, but analysis shows it is entirely within stream segments with a regulatory buffer of 150 feet. In addition to the spawning reach buffers, increased buffers on smaller tributaries (Type 3, 4 and 5) could possibly benefit water quality and instream channel conditions.

*2. Comprehensive Floodplain Management (Flood Hazard Mitigation Ordinance and UDC)* Floodplain Management is addressed in section 3.6.6 of the UDC, which adopted by reference the Jefferson County Floodplain Management Ordinance. The Flood Hazard Prevention Ordinance (which supercedes the Floodplain Management Ordinance) addresses primarily the impacts of flooding on public health and public safety. The existing ordinance does not provide a regulatory framework for protection of environmental features that are unique to floodplains, and the habitat for summer chum salmon that is located on the floodplain and in estuaries.

Instead of a regulatory approach, the floodplain communities may be more supportive in the development of comprehensive floodplain management plans. The floodplains are impacted significantly by land use practices that in many cases occurred early in the 20<sup>th</sup> century. Thus, focusing on regulations that affect only new development will likely not address the historical impacts. The issue of floodplain management and the impact on summer chum recovery is discussed in more detail in **Section IV, Approaches to address conflicts with summer chum recovery.**

Floodplain habitat would be enhanced through identification of historic sloughs and side channels, and improved protection of the channel migration zone in the summer chum spawning areas. Although the standard riparian buffers may be increased when there is a CMZ, the current regulatory structure does not specify how that would happen. Protection of floodplain complexity and key summer chum spawning habitat would be better protected with clear UDC language delineating development limitations in those areas.

### **Fish Passage Blockages and Access Constraints**

Access to spawning and rearing habitat has not been identified to be a limiting factor for the recovery of summer chum in eastern Jefferson County. Summer chum spawning is located primarily in lower mainstem rivers and large tributaries, which are not prone to being blocked by culverts or other fish passage barriers.

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However, access to important floodplain habitat has been historically limited through the channelization of floodplain tributaries and distributaries, development of dikes, and development of roads and structures that limit fish access in the estuaries. These land use changes blocked substantial rearing habitat, and make summer chum more vulnerable to predation, as they are forced to use the mainstem channels for migration. Furthermore, many distributaries have been “cut off” and now function as blind tidal sloughs.

Current regulations address some of the summer chum needs for fish passage and access related to new and ongoing development, but do not alleviate the degradation that occurred from historical land use practices.

The UDC contains the following provision regarding stream crossings:

- Stream crossings must be avoided whenever possible. When allowed, crossings are restricted as per Section 3.6.8.e (1). More specifically for summer chum habitat, stream crossings are severely restricted over streams with anadromous salmonids.

Existing roads, especially Highway 101, impact estuary function substantially. Development in those areas has been limited in recent years and will continue to be constrained.

### **Shoreline Modifications**

Shoreline modifications impact riparian and marine nearshore processes that maintain healthy habitat for summer chum salmon. Jefferson County is early in the process of updating the Shoreline Management Master Program (SMP), which must be completed by 2009. The update is required to implement updates to the Washington State Shoreline Management Act, that was first adopted in 1971.

Jefferson County has begun the process to update the SMP. Jefferson County is required to inventory existing resources, critical habitats and processes. At that point, shoreline designations and uses must be identified and then implemented through development regulations and standards. This inventory will occur parallel with the development of the summer chum recovery plan and will not likely be completed in time for contributing much information.

One significant limitation is the general lack of understanding about nearshore processes such as vegetation management issues. For instance, there is not a broad body of literature that describes the various impacts to shoreline functions from different types and widths of vegetated buffers. Furthermore, there are many natural changes in the marine environment that scientists cannot explain (i.e., loss of kelp beds from Protection Island). Thus, there are serious challenges to develop policies to protect features like eelgrass beds and shoreline processes such as drift cells, while the understanding of these features and processes is evolving.

Explaining policies and regulations is also a challenge, and faces mixed public acceptance because of this lack of understanding. Generally, professionals have tended to try to draw connections to freshwater processes where there is a better understanding of the processes.

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However, this may not be the most effective and defensive approach. Certainly, there are going to be challenging policy interpretations regarding docks, floats, and placement or retention of LWD in the marine nearshore environment.

Shoreline modifications as well as other issues relating to shoreline use will be addressed in the SMP update. At this point, the UDC has strong language discouraging, but not preventing shoreline alterations. Bank stabilization is only allowed when an applicant proves that “bioengineered” protection cannot be used as per Section 3.6.8.e (4). This reduces the amount of “bank armoring” that simplifies and degrades channel condition. However, protecting a residence is allowed under state law, and if bulkheading is the best option to protect a residence, then the property owner will install a bulkhead. SMP language that conflicts with state law cannot be adopted without legal jeopardy for Jefferson County.

Other issues with shoreline modifications relate substantially to past land use practices. Historic impacts, such as developing marinas, installing jetties that disconnect drift cells, and eliminating salt marshes and pocket marshes through dredging or filling have degraded shoreline habitat. Estuarine diking and ditching of distributaries is also an impact. These impacts will be best remediated not through additional land use regulations, but through acquisition and/or restoration.

### **Implementation**

Although the regulations to protect habitat functions and values are in place that provide a generally-protective framework for summer chum recovery, there are implementation weaknesses. Jefferson County has approximately 27,000 people with a very limited County budget, as Jefferson County has minimal amounts of retail and industrial business outside of the City of Port Townsend. Habitat protection regulations are very complex, and challenging to adequately implement and enforce. Without an infusion of substantial funding that is beyond the capability of the local tax base, Jefferson County cannot ensure effectiveness of the existing regulations.

To provide assurance for habitat protections, Jefferson County would need additional staff to provide technical assistance and oversight, improved education and outreach, and enforcement of regulations when necessary. Existing planning staff would benefit from technical assistance and support, either from additional technical staff, or from other agencies and entities. The range of technical support is needed in forestry, fisheries habitat, and geologic and shoreline processes.

Habitat protection would improve with additional public education. When property owners understand how they can voluntarily protect habitat and understand the need for habitat protection regulations, the cost and need for enforcement is reduced. Land stewardship is improved, often reducing the tension between property rights and environmental protection. Often, many activities that impact habitat cannot be regulated well. Examples might include diverting small streams and cutting of firewood from floodplains. The only real approach to reduce the impacts of these activities on habitat is through a good public education program. Finally, when other implementation methods fail, enforcement of regulations is important.

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However, enforcement is very expensive and is unpredictable if the enforcement process includes jury trials. The County, as do many state agencies, relies heavily on “voluntary compliance.”

Overall, budget limitations do not allow for increased technical support, site planning assistance, public education and enforcement that is needed to improve summer chum habitat protections in Jefferson County.

## II. Economic and land development projections

The Jefferson County Comprehensive Plan was adopted in 1996. The Comprehensive Plan reported that in 1996 the largest private employer in the County was the Port Townsend Paper Mill. Although the employment at Port Townsend Paper has been reduced since then, it is still the largest private employer in the county. Many small businesses are located in the City of Port Townsend, Glen Cove, and Hadlock. There are a few small-scale industrial and commercial establishments scattered throughout the county.

The economic base for Jefferson County is currently in a state of transition. Historically, Jefferson County’s economic base was closely tied to resource extraction activities such as fishing and forestry. For a variety of reasons, Jefferson County’s economic base faces a major restructuring.

By far, the fastest employment growth in Jefferson County has been found in the service sector. In addition to service sector growth, the Comprehensive Plan envisioned growth in cottage industries and home-based business. Growth in high technology businesses will be tied to location of infrastructure, and is unlikely to occur in the watersheds supporting summer chum, instead occurring in Port Townsend and the adjacent Glen Cove industrial area.

The Comprehensive Plan included population projections for 20 years, which was the period ending in 2016. The population projections were made for a number of “planning areas” of the county. However, the projections used in the 1996 Comprehensive Plan were based on assumptions of population growth that have been subsequently proven to be too high. Jefferson County updated 20 year population projections based on the 2000 census. The end result of the census-based adjustments is that the current population projection for 2024 (40,139 people) is very similar to the Comprehensive Plan population projection for 2016 (39,397 people).

Based on the latest census information, Jefferson County and the City of Port Townsend revised their population estimates, as summarized in a memorandum from Cascadia Community Planning to the City of Port Townsend. In that memorandum, the recommendation was to estimate population growth rate in areas outside of Urban Growth Areas to 1.09% annually, and at 2.76% within the Tri-Area Urban Growth Area. The Tri-Area Urban Growth Area is generally entirely within the Chimacum Creek watershed.

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Overall, the population is expected to increase by about 53 percent in Jefferson County in the next 20 years. Of this increase, roughly 70% of the population growth is projected to occur outside watersheds supporting summer chum salmon. Nearly the entire remaining 30% of the population growth is expected in the Urban Growth Area that is within and adjacent to the Chimacum Creek watershed. Only 2% of the population growth is projected to occur in the summer chum watersheds other than Chimacum Creek.

**Table 1.** Census population estimates for each watershed and 20 year population increase projected for each.

<b>Watershed</b>	<b>Population in 2000</b>	<b>20 Year Estimated Population Growth</b>	<b>2024 Estimated Population</b>	<b>Notes</b>
Salmon Creek	118	23	141	Rural Growth Rate assumed 1.09%
Snow Creek	68	13	81	Rural Growth Rate assumed 1.09%
Chimacum Creek	4,669	4,005	8,674	Based on UGA population growth rate of 2.76% and rural growth rate of 1.09%*
Little Quilcene River	353	69	422	Rural Growth Rate assumed 1.09%
Big Quilcene River	560	110	671	Rural Growth Rate assumed 1.09%
Dosewallips River	284	56	340	Rural Growth Rate assumed 1.09%
Duckabush River	350	69	419	Rural Growth Rate assumed 1.09%
Fulton Creek	33	7	40	Rural Growth Rate assumed 1.09%

\*Note: Population projections are based on Resolution of Jefferson Board of County Commissioners and City of Port Townsend and analysis of trends in population growth (Memo dated April 16, 2003 from Cascadia Planning)

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### **III. Areas of potential conflicts between development and summer chum habitat**

A rough analysis of the impact of projected development was conducted for the Draft Jefferson County Surface Management Plan, based on Jefferson County standards for allowable impervious surfaces, stormwater standards, zoning, existing lots and building setback requirements. Except for Chimacum Creek, in all the watersheds with summer chum salmon spawning populations, impervious surfaces are estimated to be below 3% at 20 year projected development levels. This estimate holds true whether the entire watersheds are analyzed, or just the reaches that support summer chum salmon spawning.

From the population growth projections, and based on the existing regulatory structure, there do not appear to be any major conflicts between future development and protection and restoration of summer chum in the following watersheds:

- Salmon Creek
- Snow Creek
- Big Quilcene River
- Little Quilcene River
- Duckabush River

However, historic land use impacts may still impede recovery of summer chum in these watersheds. Habitat restoration to offset historic habitat degradation may be necessary to recover salmon. Identification of ongoing and future planned habitat restoration will be detailed in a later companion report.

Two watersheds with important summer chum salmon habitat that need additional analysis are discussed below:

#### **Chimacum Creek**

Based on current development patterns, the Hadlock Urban Growth Area (Hadlock UGA) is one area where future development may conflict with summer chum recovery. The extent of the Hadlock UGA is shown in Figure 2. Although the Hadlock UGA is considered within the Chimacum Creek watershed, only a portion of the land area actually drains toward Chimacum Creek. Instead, most of the area within the Hadlock UGA directly infiltrates into the excessively coarse soils, and drains directly to marine waters. Other areas of the UGA have formal stormwater collection, which also bypasses Chimacum Creek, draining into marine waters. A more detailed subwatershed-scale analysis is being conducted by Gray and Osborne. This analysis will be completed in mid-2004 as a part of the Tri-Area Stormwater Plan.

The summer chum spawning reach is generally below the Irondale Road Bridge, which is outside of the proposed UGA. However, the spawning reach is also downstream of the proposed UGA, so upstream hydrologic and water quality impacts potentially could affect the spawning reach.

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Jefferson County is planning for mitigations to reduce potential water quality and quantity impacts to Chimacum Creek from the development of the Hadlock UGA. In developing a final stormwater management plan for the Urban Growth Area, Jefferson County will need to establish adequate water quality protection standards and monitoring to assure that water quality and habitat are maintained in Chimacum Creek to comply with the State Growth Management Act, Federal Clean Water Act and other applicable laws. The necessary stormwater controls and monitoring program will be included as a part of the final Hadlock UGA Capital Facilities inventory. The documents are scheduled to be adopted in 2004.

One way that Jefferson County could mitigate development would be to retrofit stormwater drainage from road crossings over Chimacum Creek. Currently, there are three road crossings of Chimacum Creek adjacent to the Urban Growth Area. The first one is at the Four Corners Road; the second is at Hunt Road; the final crossing is at Irondale Road. Of the three crossings, the Irondale Road crossing has been redesigned very recently to infiltrate stormwater consistent with best management practices. If stormwater treatment at the other two other crossings was also improved, there may be a net improvement from water quality and quantity impacts to channel conditions and spawning habitat.

### **Dosewallips River**

Existing and future development in and around Brinnon will continue to affect summer chum recovery. Currently, the river is diked on both sides from the mouth through the community of Brinnon to the upper extent of the community (roughly ½ mile upstream from highway 101).

Although the amount of future development is projected to be high, the continued existence of the commercially-developed area in the community of Brinnon, and the presence of the Dosewallips State Park will continue to constrain river movements and natural floodplain function. These constraints will limit restoration potential in the lower reaches of the river, although estuary restoration probably could be accomplished.

Currently, the lower reaches have habitat to support sustainable summer chum populations. However, the populations that can be sustained from the current habitat are reduced over historical levels. With the constraints presented by the current land use, increasing the population of summer chum may be challenging. Potentially, combining salmon restoration planning and floodplain management would afford improvements to habitat within the existing constraints and planned future development.

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### IV. Approaches to address conflicts with summer chum recovery

#### 1. Acquisition of key habitat in summer chum spawning areas

Recovery of summer chum salmon is heavily dependent on habitat conditions in floodplain areas that have historically been impacted by land use practices, especially agricultural impacts. Purchase of these areas may be required to improve past land use degradation. Key habitat acquisition is occurring in the Salmon and Snow Creek, in the Big and Little Quilcene, Chimacum Creek and to a lesser extent, in the Dosewallips River watersheds.

Other areas, such as large tracts of land along the Dosewallips and Duckabush Rivers, are relatively high quality, with minimal impacts from development. Those areas have been impacted from historical forestry practices, and generally will be having improving riparian conditions over time as long as current forest practice standards are in place, enforced adequately.

The current county regulations provide protections for these areas as development occurs, but because they are so few, these “last best habitat areas”, which have recently been termed as habitat “refugia” could be acquired to protect high quality, functioning habitat for the least “long term” expense.

Strengths: This approach guarantees protection of habitat by preventing key habitat from being developed in manners that are incompatible with providing high quality habitat. There are multiple benefits in some floodplain areas where public safety protections may be enhanced from purchasing parcels prone to frequent flooding. In the long term, this approach can be quite cost-effective.

Weaknesses: This approach is relatively expensive in the short term. To succeed with this approach, often multiple landowners are needed to be interested in selling their property to protect an entire spawning reach. As more land is acquired, it becomes more challenging to maintain acquired lands and protect them from such activities as poaching of trees and firewood cutting.

Progress: Jefferson County has a conservation futures tax that provides funding for habitat acquisition. For the last three years, the County has been budgeting roughly \$100,000 per year to acquisition from the payments made to the County through the Secure Rural Schools and Self Determination Act of 2000. These two funding sources are often leveraged against other State and Federal grants to provide the funds needed for acquisition. Jefferson County often partners with local non-profit salmon restoration organizations, the Jefferson Land Trust and State agencies to complete habitat acquisition projects. Details of the current status of habitat acquisitions in Jefferson County will be detailed in a later companion document.

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## 2. Compensatory mitigation

Strategies to mitigate development impact are allowed for in the Jefferson County development regulations only regarding wetlands, in UDC Section 3.6.9.f. Because large scale developments generally have not occurred in Jefferson County in the past, the County has not formalized mitigation strategies. Instead large scale developments, such as the Port Ludlow Master Planned Resort, generally identify appropriate mitigation strategies through SEPA.

One strategy that could benefit summer chum recovery would be to develop a Transfer of Development Rights program, but the benefits of such a program would have to be balanced with the opportunity costs of other potential actions to help recover summer chum populations.

Several specific projects could be considered compensatory mitigation for development, and would improve summer chum salmon habitat. Two road crossings over Chimacum Creek could be improved to reduce the potential water quality and hydrologic impacts – the crossing at Hunt Road and the crossing at Four Corners Road. Although there is no documented impact from these two crossings, as development increases in the area adjacent, improvements could mitigate other water quality or hydrologic changes.

Other policies could be implemented in the Chimacum Creek basin to protect water quality and hydrology as the Urban Growth Area develops. Existing stormwater treatment is minimal. The area is underlain by coarse soils, so surface runoff is not significant. However, soils are insufficient in many areas to properly treat stormwater, so additional stormwater treatment prior to infiltration would benefit water quality. In addition, although Jefferson County has adopted the 2001 Western Washington Stormwater Management Manual, current dependence on onsite sewage systems creates somewhat of a disincentive to infiltrate stormwater, as it may impact shallow water table during the wet season. Development of sewer systems may have a side impact of better stormwater control.

Strengths: Generally tied to permit approval so it is easily implementable.

Weaknesses: Mitigation is generally not as effective as protection of high quality habitat. Development patterns in Jefferson County do not afford much opportunity for this type of action to occur. Generally, a monitoring component is necessary to determine the effectiveness of the mitigations. Such monitoring components are not often funded at levels that are needed to be effective.

Progress: The UDC has provisions in it that should provide sufficient required mitigation.

## 3. Monitoring to assess impacts with an adaptive management strategy

This element is an important piece in understanding the status of habitat and water quality, but itself does not represent a sufficient “stand alone” measure to address conflicts with summer chum recovery. Jefferson County does not have a mechanism that provides funding to ongoing monitoring countywide. Currently, the only stormwater district funding is collected in Port

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Ludlow, where stormwater treatment and monitoring is funded through the Port Ludlow Drainage District.

Monitoring of cumulative impacts from development are not currently funded by Jefferson County, although the information when coupled with an adaptive management strategy could help assure summer chum habitat recovery.

Currently, Jefferson County operates stream gauges on Salmon Creek, Snow Creek, Chimacum Creek, Thorndyke Creek, Tarboo Creek, Big Quilcene River, and the Little Quilcene River. Funding is provided by the Washington Department of Ecology. The long-term maintenance of these gauges will help in determining cumulative impacts from development and also impacts from climate change over a long time period. A stream gauge is needed on the Dosewallips River.

Water quality monitoring is conducted by many agencies, but often with different objectives. Jefferson County provides funds primarily to the Conservation District for water quality monitoring. However, summer chum habitat assessment and determining impacts from development is not a stated monitoring goal of the Conservation District. The focus of the Conservation District tends to be weighted toward agricultural impacts on water quality. However, the Conservation District does provide monitoring services in most eastern Jefferson County streams and rivers.

Strengths: Monitoring provides information needed for long term assessment of development impacts, many of which are cumulative from incremental development. When coupled with an effective adaptive management strategy, a strong monitoring program can be essential in understanding cause and effect relationships, and in the end modifying practices to reduce negative impacts on habitat, water quality and water quantity.

Weaknesses: By itself, monitoring does not protect or improve habitat. Implementation of adaptive management provisions is needed in response to monitoring data. Commitments to change standards based on data at some point in the future is challenging because the nature of political uncertainties, budgets and current County priorities.

Progress: Through grants, Jefferson County and its partners have “patched” together a basic monitoring program. However, evaluating the effectiveness of land use regulations and compliance with those regulations is missing. Because of the dependence on grant funding, monitoring programs have overemphasized Chimacum Creek, and underemphasized the Dosewallips and Duckabush Rivers.

#### **4. Comprehensive Floodplain Management (primarily the Dosewallips River)**

As discussed under element III of this report, the Dosewallips River floodplain in and around Brinnon provides habitat for summer chum salmon, but also is the location of a community with commercial and residential development that limits the restoration potential for the river. While some progress is being made in both community planning and for salmon recovery planning, an

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effort needs to be made to bring these two processes together. If both goals are to be met, floodplain management must occur at the same “table” as habitat restoration planning.

**Strengths:** Addressing community needs and habitat needs simultaneously improves support for controversial actions that need to be taken, improves relationships between resource agencies, community development and environmental interests, and provides a higher likelihood for implementation due to improved funding of multi-faceted projects.

**Weaknesses:** The process can be expensive, time consuming and politically-challenging. Often, groups will leave the process to challenge the outcomes in other venues (i.e. challenge actions at the Growth Management Hearings Board).

**Progress:** A model of how this might work can be viewed on the Big and Little Quilcene Rivers. On those systems, a comprehensive floodplain management plan was developed and has been implemented over the past decade. Jefferson County and state agencies have purchased floodplain properties, set dikes back, and are in the process of designing a plan for infrastructure and estuary modifications to allow for habitat improvements, while reducing flood risks to the community of Quilcene. Similar progress has not been made for the Dosewallips River.

### **Unresolved issues (outside of Jefferson County’s jurisdiction):**

**FEMA:** Currently the Federal Emergency Management Agency (FEMA) has been sued for “takings” under the Endangered Species Act for negative impacts that the National Flood Insurance Program (NFIP) may be having to salmon habitat. This NFIP policies and the outcome of the lawsuit impacts Jefferson County’s ability to manage both floodplain development and habitat. As long as Federal funding is provided to rebuild houses in frequently flooded areas, restoration of natural floodplain functions, and thus key summer chum habitat, will be compromised. Plus, property owners and environmental interests do not have the same incentive to compromise.

Restructuring disaster relief through FEMA or the NFIP so that local plans and objectives are factored into decisions would improve habitat, while still protecting (or improving) public health and safety.

**Highway 101:** US Highway 101 bisects the Dosewallips River, Duckabush River (and to a lesser extent Fulton Creek) in the estuaries of each of river systems. The fill that makes up the road bed of Highway 101 blocks natural estuary function, simplifies the distributary channels and limits habitat available to summer chum. Additionally, blocking distributaries has been shown to increase predation on juvenile summer chum by forcing them into the mainstem river channel during outmigration.

Without redesigning Highway 101 across the Dosewallips and Duckabush Rivers to improve estuary functions, habitat restoration of critical summer chum habitat will be limited. Habitat protection and restoration elsewhere in these two systems may not be sufficient to overcome the negative impacts to the estuaries caused by the highway.