



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

# **Preliminary Cost Benefit and Least Burdensome Alternative Analyses**

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*Chapter 173-518 WAC*

*Water Resources Management Program for the  
Dungeness Portion of the Elwha-Dungeness  
Water Resources Inventory Area (WRIA) 18*

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# **Preliminary Cost Benefit and Least Burdensome Alternative Analyses**

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## **Chapter 173-518 WAC Water Resources Management Program for the Dungeness Portion of the Elwha-Dungeness Water Resources Inventory Area (WRIA) 18**

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## Executive Summary

This report reviews the economic analysis performed by the Washington State Department of Ecology (Ecology) to estimate the expected benefits and costs of the proposed rule for the Water Resources Management Program for the Dungeness Portion of the Elwha-Dungeness Water Resources Inventory Area (WRIA) 18 (WAC 173-518). The Washington Administrative Procedure Act (RCW 34.05.328) requires Ecology to evaluate significant legislative rules to “[d]etermine that the probable benefits of the rule are greater than its probable costs, taking into account the qualitative and quantitative benefits and costs, and the specific directives, of the law being implemented.” Ecology expects the likely benefits of the proposed rule to be larger than its likely costs.

The proposed rule:

- Sets instream flow levels for the Dungeness mainstream, tributaries, and independent drainages.
- Closes subbasins to new surface water withdrawals for at least part (if not all) of the year.
- Requires mitigation of all new groundwater uses, and provides for a water exchange to facilitate mitigation. This includes permitted and permit-exempt uses.
- Requires metering of all new withdrawals. This includes permitted and permit-exempt uses.
- Establishes reservations (“reserves”) under RCW 90.54.050(1) for domestic (indoor) use.
- Establishes maximum depletion amounts to limit temporary adverse impacts for non-domestic water use under an approved mitigation plan, and set a limit on total impacts from all new water uses to closed surface waters.
- Establishes maximum allocation amounts for interruptible purposes from high flows from the Dungeness mainstem.
- Includes a provision allowing storage projects for environmental enhancement.

## Costs and benefits

Ecology estimated total costs of \$7.7 million – \$23.1 million associated with the proposed rule. These costs are in present value terms, over 20 years.

**Table 1: Costs of the proposed rule**

Cost	Rationale	Based on Building-Permit Growth	Based on Population Growth
Metering new permit exempt uses	Permit-exempt water users would be required to meter. They are not required to meter now.	\$1.4 million	\$2.1 million
Fish losses in some areas	Some streams would experience fish losses. They would have lower flows than projected now.	\$30 thousand	\$50 thousand

<b>Cost</b>	<b>Rationale</b>	<b>Based on Building-Permit Growth</b>	<b>Based on Population Growth</b>
Increasing existing permit-exempt use	Existing permit-exempt users who want to increase their water use would be required to mitigate, or forego the value of using more water. They can increase use of permit-exempt water up to 5,000 gpd total at no cost now.	\$1.9 million	\$17.9 million*
New permit-exempt users	New permit-exempt users would be required to mitigate water use, or forego the value of development. They can use permit-exempt water up to 5,000 gpd at no cost now.	\$1.3 million	
Administering a water exchange market and processing water rights	The new water exchange mitigation market will require staff time from Ecology and Clallam County. There is no existing market.	\$3.1 million	\$3.1 million
<b>Total Costs</b>		<b>\$7.7 million</b>	<b>\$23.1million</b>

\*This value accounts for population-based growth projections including increases to existing use and new uses

Ecology estimated total benefits of \$46.5 million – \$94.1 million associated with the proposed rule. These benefits are in present-value terms, over 20 years.

**Table 2: Benefits of the proposed rule**

<b>Benefit</b>	<b>Rationale</b>	<b>Based on Building-Permit Growth</b>	<b>Based on Population Growth</b>
Avoided fish losses	Some streams would experience avoided fish losses. They would have higher flows than projected now.	\$3.8 million	\$6.8 million
Increased certainty in development	Development would be less likely to be stopped by future closures resulting from legal challenges. Future development is at risk of this now.	\$19.9 million	\$62.1 million
Avoided legal costs	Legal challenge would be less likely on the grounds of instream and fish protection. Legal challenge is likely now.	\$2.4 million	\$4.8 million
Protecting existing restoration	Money has been invested in multiple restoration projects for salmon habitat. These investments lose value under current projections of streamflow loss.	\$20.5 million	\$20.5 million
Potential value of avoided curtailment	Existing and future junior water users would be less likely to have use curtailed in favor of senior right holders. They are at risk of this now.	Not quantifiable	
Potential value of beneficial storage projects	Storage projects that benefit people and environment would be possible. There is no allowance for these now.	Not quantifiable	
<b>Total Quantified Costs</b>		<b>\$46.5 million</b>	<b>\$94.1 million</b>

## **Least burdensome alternative**

Ecology determined that the content of the proposed rule is the least burdensome alternative considered during this rulemaking. Ecology compared the proposed rule to:

- No action
- No mitigation
- Use of deeper aquifers
- Lower minimum instream flows
- No water measurement



# Chapter 1: Background and Introduction

## 1.1 Introduction

This report reviews the economic analysis performed by the Washington State Department of Ecology (Ecology) to estimate the expected benefits and costs of the proposed rule for the Water Resources Management Program for the Dungeness Portion of the Elwha-Dungeness Water Resources Inventory Area (WRIA) 18 (WAC 173-518). This document is intended to be read with the Least Burdensome Alternative (LBA) analysis (included in this document) and Small Business Economic Impact Statement (SBEIS; Ecology publication 12-11-021<sup>1</sup>) to develop an understanding of the full impact of the proposed rule.

The Washington Administrative Procedure Act (RCW 34.05.328) requires Ecology to evaluate significant legislative rules to “[d]etermine that the probable benefits of the rule are greater than its probable costs, taking into account the qualitative and quantitative benefits and costs, and the specific directives, of the law being implemented.”

Ecology’s analysis is based on the best available information at the time of this analysis. Ecology encourages the public to comment on this document and provide any additional pertinent information to improve the accuracy of final estimates or content.

## 1.2 Description of the proposed rule

The proposed rule:

- Sets instream flow levels for the Dungeness mainstream, tributaries, and independent drainages.
- Closes subbasins to new surface water withdrawals for at least part (if not all) of the year.
- Requires mitigation of all new groundwater uses, and provides for a water exchange to facilitate mitigation. This includes permitted and permit-exempt uses.
- Requires metering of all new withdrawals. This includes permitted and permit-exempt uses.
- Establishes reservations (“reserves”) under RCW 90.54.050(1) for domestic (indoor) use.
- Establishes maximum depletion amounts to limit temporary adverse impacts for non-domestic water use under an approved mitigation plan, and sets a limit on total impacts from all new water uses to closed surface waters.
- Establishes maximum allocation amounts for interruptible purposes from high flows from the Dungeness mainstem.
- Includes a provision allowing storage projects for environmental enhancement.

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<sup>1</sup> Available at <http://www.ecy.wa.gov/biblio/1211021.html>.

### 1.3 Reasons for the proposed rule

There is a long history of active water management in the Dungeness watershed, dating to 1896 when construction started on the first irrigation ditch system. The surface water rights for the Dungeness River were adjudicated in superior court in 1924. The adjudication confirmed water rights totaling 518 cubic foot per second (cfs) during the irrigation season. This total diversion rate, confirmed by the Superior Court, compares to the mean monthly flows of 701 cfs during June and 171 cfs during September. June and September are the months with the highest and lowest streamflows, respectively, during the 1924-2011 period of record for the United States Geological Service (USGS) gage at River Mile 11.8. The daily mean flows in the late summer fall as low as 80 cfs.

The Department of Ecology started to address water resources management in the Dungeness watershed with the funding of a pilot project for the Dungeness-Quilcene in 1992.. The Dungeness-Quilcene project was one of two pilots selected to implement the landmark Chelan Agreement on Water Resources.

The Chelan Agreement established a state-wide forum to review water management policies, and created a framework for the development of regional water management plans. The Jamestown S’Klallam Tribe nominated the Dungeness River as a pilot watershed planning project under the Chelan Agreement. Cooperation between Clallam County and the Jamestown S’Klallam Tribe developed since the 1980s was a key factor in their decision to negotiate rather than litigate over water issues:

“By the 1990’s faced with the situation of a serious decline in the runs of salmonids in the river, and the numerous factors contributing to their decline, the Jamestown S’Klallam Tribe had the choice of taking the issue to court, or attempting the new Chelan Agreement process to see if the needs of the fish, agriculture, and a rapidly growing populace could be met by negotiation.”

...

“As in similar processes, the negotiations commenced after all parties saw that it was in their interest to participate, and that they could no longer ignore the issues. Besides the degrading conditions of the watersheds, other issues that needed to be addressed immediately included the threat of a lawsuit by the Tribe that could entirely reallocate the region’s water supplies, and the fear that the State of Washington could remove matters from local control and develop an alternative water management scheme.”<sup>2</sup>

The Dungeness-Quilcene Plan (“DQ Plan”) was completed in 1994. Signatures included caucus representatives from business, environmental groups, fish, local government, recreation, state government, tribes, and a technical committee co-chair. The completed plan was forwarded to Ecology as “recommendations and strategies developed to provide

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<sup>2</sup> Seiter, Ann, Jamestown S’Klallam Tribe. *The Dungeness-Quilcene Water Resources Management Plan*. June 30, 1994. p. 1.7.

protection and management for the quality and quantity of the region’s surface and ground-water.”

Some recommendations in the DQ Plan that are important in the context of this rule include the following:

- Instream flows should be protected and supplemented and improved in the future as possible, to provide minimum flows needed for stocks of salmonids and other species in the area’s rivers and streams.
- The Instream Flow Incremental Methodology (IFIM) numbers established for the Dungeness River as minimum instream flows should be adopted by rule, and given a priority date effective as of the date of the rule, for use in permitting. (The instream flow levels for the Dungeness River in Ecology’s proposed rule are the same as those recommended in the DQ plan.)
- No surface water permits should be issued from small streams in eastern Clallam County.
- In order to provide water during low flow periods, the possibility for off-channel storage of water from irrigation diversions should be investigated.
- Meter all new community water systems and require that the State, County, City, or PUD with jurisdiction record total annual water use.

In 1998, Clallam County, the Lower Elwha Klallam Tribe, the Jamestown S’Klallam Tribe, the Agnew Irrigation District, and the City of Port Angeles were signatories to an intergovernmental agreement initiating another round of watershed planning under the newly enacted State Watershed Planning Act, RCW 90.82. The 1998 agreement acknowledges the DQ Plan and clearly states “It is not the intent of the Initiating Governments to repeat, overturn, or delay implementation of technical studies, management recommendations, and water use agreements which were included in the [DQ Plan].”<sup>3</sup> The Dungeness River Management Team was one of two teams comprising the planning unit that conducted the new planning process, and in 2005 the Elwha-Dungeness Watershed Plan (the Watershed Plan) was adopted by the Board of Clallam County Commissioners. The watershed plan documents the over appropriation of the Dungeness watershed.<sup>4</sup>

The Watershed Planning Act specifies that local watershed planning groups can recommend instream flows to Ecology for rule-making, and obligates Ecology to undertake rulemaking to adopt flows that are recommended through the watershed planning process. This Act also requires Ecology to consult with Tribes before adopting instream flows.

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<sup>3</sup> Elwha-Dungeness Watershed Plan, 2005. Chapter 1 p. 21.

<sup>4</sup> Ibid. Chapter 2.3. p. 79.

The 2005 Elwha-Dungeness Watershed Plan contains many recommendations, some of which are being implemented through this proposed rule:

#### Chapter 3.1 Water Quantity Recommendations:

- Allow groundwater withdrawals from deeper aquifers in continuity with surface water if impacts on stream flow are mitigated. Mitigation should address impacts to flows, water quality, and temperature. For example, flow mitigation might be accomplished by returning an amount of water to the potentially affected stream reach equivalent to the calculated impact. This will be refined in intergovernmental agreements, as recommended below.
- For all well construction activity in WRIA 18, follow and enforce the State Minimum Standards for Construction and Maintenance of Wells and the Water Well Construction Act or relevant Federal standards.
- Encourage all new water supply wells, including permit-exempt wells, to be drilled to the second aquifer or lower in the Dungeness Planning Area/East WRIA 18.
- For purposes of assessing aquifer and stream flow impacts, recharge capabilities of onsite septic systems should incorporate a realistic recharge quantity, such as 70-75% of in-house use, as well as recharge quality.
- For all new well construction activity, make it clear that the date of priority (i.e., seniority) of a water right is the date the water is put to beneficial use, not the date the well was drilled.
- New permit-exempt wells should be drilled only where public water service is unavailable. Unavailable means not within a reasonable timeframe, is not cost effective, or is not feasible. If new development lies within a reasonable distance from the boundaries of the service area of a public water system, that public water system should have been contacted and requested to provide service prior to land use approval.

#### Chapter 3.4 Instream Flow Recommendations

- Set instream flows for all WRIA 18 streams to protect flows adequate for all life stages of salmonids, as identified in Tables 3.4-1 and 3.4-2 (in the watershed plan).
- Develop seasonal closures for those WRIA 18 streams that are flow-limited during the low-flow season and that are recommended by Elwha-Morse Management Team (EMMT) or Dungeness River Management Team (DRMT), for consideration during rule-making.
- Instream flows should be protected as well as supplemented and improved in the future as possible, to provide sufficient flows needed for healthy stocks of salmonids and other species in the area's rivers and streams.

In addition the Watershed Plan contemplated establishing reserves that would be replenished. From Chapter 3.1 Future Water Availability Framework:

The proposed approach would be to define a mechanism that reserves a limited amount of groundwater. This amount would be replenished, over a length of time to be defined later, from conservation water savings or aquifer or off-channel storage, provided use of such reserved water would not degrade fish populations, or habitat, or beneficial uses and is mitigated. Details of the legal framework for such a reserve and associated mitigation requirements would need to be worked out in the intergovernmental agreement and in the watershed plan's implementation plan and rule.

On March 24, 1999, Puget Sound Chinook salmon, including Dungeness River Chinook, were listed as threatened under the Federal Endangered Species Act (ESA). Historically, Dungeness Chinook runs have been estimated at 8,000 to 20,000 fish annually, but in 1993 the annual run of returning adult Chinook to the Dungeness River hit bottom, with a total return of 43 fish. Water conservation by the agricultural water users and an experimental hatchery program to raise Chinook in captivity (initiated in the mid-1990s) may have helped bring Dungeness Chinook back from the brink of extinction. Since 1999 three other members of the salmon family have been listed for protection under the ESA for the North Olympic Peninsula: summer chum, bull trout, and steelhead. These species are found in the Dungeness River and in several of the smaller streams in the watershed.

The adjudicated water rights to the Dungeness River held by the irrigation districts and companies frequently exceed the flow in the river for several months each year. The irrigators' water rights were originally affirmed through a superior court adjudication in 1924. Recognizing their key role in the watershed, the Dungeness River Agricultural Water Users Association (WUA) has worked with State, Tribal, local, and federal resource agencies to reduce the impact of their diversions on the river through irrigation efficiency projects to reduce waste, and voluntary agreements to limit diversions during the low flow time of year.

Work on this proposed water management rule began after adoption of the Elwha-Dungeness Watershed Plan in 2005. Ecology worked with local governments, Tribes, business owners, environmental and civic organizations, residents and others in eastern Clallam County to draft rule language. In early November 2010 discussions began with Clallam County, WUA and Tribes about delaying rule filing while local entities worked on water management issues crucial to rule implementation that were beyond the scope of a rule. A Cooperators Agreement among Clallam County, the Sequim-Dungeness Water Users Association, and Ecology was signed in February 2011. While not signing the Agreement, the Jamestown S'Klallam Tribe conveyed its support of shared goals through a letter to Ecology in which it pledged to participate in the work group process.

The goals of the formal Agreement are to:

- Prevent permanent reductions in Dungeness River flows or small streams due to new appropriations.
- Supply adequate and reliable water for new uses.

- Maintain sustainable agriculture in the Dungeness Valley.
- Restore stream flows in the main-stem Dungeness and, where feasible, small streams.
- Have in place an instream flow rule that protects instream resources and existing water rights within 18 months after the Agreement is signed.

This agreement in principal led to the formation of the Local Leaders Water Management Work Group (LLWG). This group met from December 2010 until early 2012 and on March 5, 2012, produced a report titled Summary Report and Recommendations on Water Management in the Dungeness Watershed that documents the work of the LLWG. The LLWG accepted the premise that all new consumptive uses of water are obligated to be mitigated. In anticipation of rule adoption, the group worked on mitigation supply and demand, water banking procedures, outreach, funding studies, and a flow restoration strategy.

## 1.4 Document organization

Ecology organized this document into the following sections:

- **Baseline and the proposed rule (Chapter 2):** Description and comparison of the baseline requirements in state and federal laws and rules, to the proposed rule. How both apply in context.
- **Likely costs of the proposed rule (Chapter 3):** Analysis of the types and size of costs Ecology expects impacted parties to incur from the proposed rule.
- **Likely benefits of proposed rule (Chapter 4):** Analysis of the types and size of benefits expected to result from the proposed rule.
- **Cost-benefit comparison and conclusions (Chapter 5):** Discussion of the complete implications of the Cost-Benefit Analysis. Comments on the results.
- **Least burdensome alternative analysis (Chapter 6):** Analysis of considered alternatives to the proposed rule.

## **Chapter 2: Baseline and Proposed Rule**

### **2.1 Introduction**

In this chapter, Ecology describes the baseline compared to the proposed rule. The baseline is the regulatory context, and how it applies in the absence of Ecology adopting the rule.

In this chapter, Ecology also describes the proposed rule, and identifies which elements of the proposed rule require analysis under the Washington Administrative Procedure Act (RCW 34.05). Complexities in the scope of analysis are discussed in proceeding chapters.

### **2.2 Baseline**

Ecology compared the proposed rule to a baseline representing what would most likely happen if Ecology does not adopt the proposed rule. This baseline includes the regulatory framework of other state and federal laws and rules, and how they would be applied. For the proposed rule, this includes a broad set of existing state and federal laws and rules, including (but not limited to) the Water Code of 1917 (Surface Water Code; Chapter 90.03 RCW), Regulation of Public Groundwaters (Groundwater Code; Chapter 90.44 RCW), and Water Resources Act of 1971 (Water Resources Act; Chapter 90.54 RCW).

#### **Issuance of new water rights**

Under the Water Resources Act, Ecology has a legal obligation to protect, and where possible enhance flows in the state's perennial rivers and streams. Ecology last issued a water right certificate in the Dungeness watershed in 1999. Technical review of applications since that time indicated that further diminished streamflows would be detrimental to fish, and groundwater withdrawals would impact stream flow. Currently, Ecology is not reviewing water right applications because of this context. In addition, surface waters may have a flow limit proviso through a surface water source limitation issued under RCW 77.57.020.

Therefore, under the baseline, Ecology does not believe water right permits can be issued in response to new water rights applications.

#### **Permit-exempt groundwater use**

Some new water uses are exempt from permitting under the groundwater permit-exemption law (RCW 90.44.050). Permit-exempt uses of groundwater can be established for beneficial uses for:

- Single homes
- Small developments
- Irrigation of small lawns and gardens
- Industrial use
- Stockwatering

Although exempt from permitting before using groundwater, these uses remain subject to all other state water laws and regulation. For example:

- Only one groundwater exemption is allowed for any one group domestic project regardless of the size of the project.
- The quantity of water in a permit-exempt water right is established through regular beneficial use, and can be lost when that regular use diminishes or ceases.
- All wells in a single project (combined together) must pump no more than 5,000 gallons per day (gpd) to be covered under this permit-exemption. If the cumulative total of withdrawn groundwater for an industrial or domestic project exceeds 5,000 gpd, a water right is required.

While permit-exempt groundwater withdrawals do not require a water right permit, to the extent the groundwater is regularly and beneficially used, the water user establishes a water right equivalent to a water right permit obtained from Ecology.

### **Measuring water use**

Existing state law (RCW 90.03.360) requires metering of all new withdrawals in each of the 16 state-wide fish-critical basins, which includes the Dungeness watershed (WRIA 18). Fish-critical basins are the 16 basins across Washington State where low flows are a known limiting factor to salmon populations. They were identified by the statewide salmon recovery strategy. While all new permitted withdrawals are required to meter their diversions, Ecology has not enforced a metering requirement for permit-exempt groundwater withdrawals in the Dungeness.

### **Reserves and maximum depletion amounts**

Under existing laws and rules, there are no established reserves within the Dungeness watershed.

Permit-exempt users currently may withdraw water as allowed by local regulations and RCW 90.44.050. Ground and surface waters are connected, consequently, each permit-exempt use results in a near-continuous, but very small, incremental adverse impact to surface waters. The new uses are subject to interruption or curtailment if their use interferes with or injures a senior surface water or groundwater right holder's ability to obtain water. The baseline does not include a cumulative limit on these flow reductions. The risk of litigation by one or more senior right holders to protect their water rights increases incrementally with each new impact, especially in light of the 1924 surface water adjudication.

### **Maximum allocations and storage**

There are no existing conditions placed on flow reductions (depletions) during high streamflow periods, nor is there any specific allowance for certain types of storage projects. However, as described above, no applications for water rights are currently being reviewed.

## 2.3 Analytic scope

The requirements in the proposed rule that are dictated by state and federal rules (to the extent that Ecology has no discretion in determining them) are exempt from this analysis. The proposed rule for the Dungeness, however, includes no such requirements. As Ecology has discretion in determining the specific contents of the proposed rule (even if guided by broader state and federal rule), all requirements are analyzed relative to the baseline.

## 2.4 Analyzed changes

Ecology qualitatively or quantitatively analyzed the impacts of the following proposed rule elements.

- Setting instream flows (establishing instream flow rights)
- Closing subbasins to new unmitigated withdrawals
- Mitigation requirement and water exchange
- Measuring water use
- Establishing reserves and maximum depletion amounts of water for future use
- Establishing maximum allocation amounts for the Dungeness Mainstem
- Storage projects

### Setting instream flows (establishing instream flow rights)

#### ***Proposed rule***

The proposed rule sets instream flows for 9 rivers and streams in the Dungeness watershed planning area of the Elwha-Dungeness, WRIA 18. If the proposed rule is adopted, instream flows would have a priority date in relationship to other water rights. The priority date would be the effective date of the rule. Washington water law protects instream flows from impairment by new water uses (except for domestic uses accessing reserved water) and water right changes and transfers.

#### ***Baseline***

Under the Water Resources Act, Ecology has a legal obligation to protect, and where possible enhance flows in the state's perennial rivers and streams. Ecology last issued a water right permit in the Dungeness watershed in 1999. Technical review of applications since that time indicated that further diminishment of streamflows would be detrimental to fish, and groundwater withdrawals would adversely impact stream flow.

#### ***Primary change***

The proposed instream flows would not fundamentally change the situation for existing water users. Setting instream flows does not affect existing water rights or require that water be put back into streams. Under the proposed rule, Ecology would approve a water right application for a new use only if mitigation, sufficiently protective of stream flows, was proposed. Establishing instream flows as water rights

helps protect current and future restored flows by integrating their protection into establishment of new water uses.

## **Closing subbasins to new withdrawals**

### ***Proposed rule***

The proposed rule legally closes all surface waters in the Dungeness watershed (WAC 173-518-050). The Mainstem Dungeness (excludes tributaries) would be closed seasonally from July 15- November 14, and the 8 smaller streams would be closed year-round. The proposed rule would also make a finding that surface water and groundwater are hydraulically connected. Therefore, it would restrict groundwater withdrawals, including new permit-exempt groundwater withdrawals,<sup>5</sup> to prevent adverse impacts to closed surface waters.

There are four exceptions to the closures that would provide for new water uses (WAC 173-518-070):

- The proposed use is non-consumptive (WAC 173-518-070(3)(b)).
- The proponent chooses to submit a mitigation plan as defined in WAC 173-518-075 and required by WAC 173-518-070(3)(a)(ii), and such plan is approved by Ecology.
- The proponent chooses to purchase mitigation credits from the water exchange as authorized in WAC 173-518-070(3)(a)(i).
- The proponent can show that the proposed use will not adversely affect any closed surface waters (WAC 173-518-070(3)(c)).

### ***Baseline***

The Dungeness River and all but one of the streams named in the rule are administratively closed (no new permits are being issued) or have a flow limit proviso through a surface water source limitation issued under RCW 77.57.020. Currently Ecology is not approving new water right applications from these streams. However, some uses for new water may be approved under the groundwater permit-exemption law (RCW 90.44.050). Although exempt from permitting, these uses remain subject to all other state water laws. Permit-exempt uses are at elevated risk of being litigated if senior water right holders believe their rights are being impaired, and subject to regulation (the use can be interrupted or curtailed) if the use is found to be causing impairment to a senior water right.

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<sup>5</sup> In the state Groundwater Code, the “groundwater permit-exemption” allows for certain uses of small quantities of groundwater; including domestic, industrial, stockwatering, and non-commercial irrigation of less than one-half acre of land. RCW 90.44.040. *See also* Washington Attorney General Opinion (2005 Op. Atty Gen. Wash. No. 17 and 2009 Op. Atty Gen. Wash. No. 6).

### ***Primary change***

The ‘closures with exceptions’ listed above are generally consistent with current rule and administrative practice for water right permit applications and should not require analysis. The closures would affect new permit-exempt withdrawals that are presently available under RCW 90.44.050. However, new uses are increasingly at risk of litigation or interruption as described above. Future permit-exempt groundwater uses would be allowed, through mitigation and accessing reserves for domestic use, although it would not be “business as usual”.

## **Mitigation requirement and water exchange**

### ***Proposed rule***

The proposed rule establishes a requirement for mitigation and allows mitigation through a water exchange (WAC 173-518-070(3)(a) and WAC 173-518-075). Future water users may submit a mitigation plan, the fundamentals of which are found in WAC 173-518-075, or mitigate effects of their water use through purchase of credits from the water exchange.

### ***Baseline***

Under current conditions, water right permit applications are not being reviewed. Although it is currently feasible to get a water right permit with an approved mitigation plan, none have yet been proposed by a permit applicant in the Dungeness basin. If eligible, water users may currently secure water under the groundwater permit-exemption law (RCW 90.44.050). Although exempt from permitting, these uses remain subject to all other state water laws and regulations. They are subject to rules (the use can be interrupted or curtailed) in the future, if they impair a senior water right.

### ***Primary change***

The proposed rule establishes a requirement that all future water users, permitted and permit-exempt alike, must mitigate their consumptive use impact before establishing a new water use. The proposed rule specifies what must be included in a mitigation plan if a future water user chooses to submit one. The specifications listed in the proposed rule generally reflect current agency practice for mitigation of permitted water use. In addition the proposed rule includes additional considerations for mitigation that are unique to this watershed (WAC 173-518-075(2)(b)):

- Projected domestic use
- The likelihood that mitigation can be obtained to offset projected stream depletions
- Water budget neutrality with respect to the Dungeness River watershed
- Maximizing instream benefits during the critical low-flow period

The proposed rule also allows mitigation through a water bank (the Dungeness Water Exchange) – the details of which would exist outside of the rule. If a future water user chose to purchase credits from the mitigation bank, then there would be a cost

involved to the user. The resulting benefit received for that cost is the use of water that would be more secure against interruption, in favor of senior water rights and the proposed instream flow limitations. Also, the new use would be more secure against litigation initiated by the federal government or a tribe to protect instream flow rights associated with the treaty right to take fish.

Water use backed by a mitigation plan and from the purchase of bank credits may continue as long as there is:

- Water in place to offset the impacts of the new water use.
- Water for domestic use available from the reserves in the streams affected by the new use.

## **Measuring water use**

### ***Proposed rule***

The proposed rule would require water meters for all new water withdrawals.

### ***Baseline***

Existing state law requires metering of all new withdrawals in each of the 16 state-wide fish-critical basins, which includes the Dungeness watershed (WRIA 18). While all new permitted withdrawals are required to meter, Ecology has not enforced a metering requirement for permit-exempt groundwater withdrawals in the Dungeness.

### ***Primary change***

Water meters would be required for all new permit-exempt groundwater withdrawals.

## **Establishing reserves and maximum depletion amounts of water for future use**

### ***Proposed rule***

The proposed rule would create reserves and maximum depletion amounts of water intended to meet the community's needs for new water use. Reserves would be relied upon to supply water for domestic use immediately after rule adoption, before mitigation projects are implemented.

Into the future, the reserves would continue to be needed in some areas. Technical studies show us that mitigation projects are not likely to be found in some areas. Mitigation projects would likely also be imperfect in time and place for the smaller streams across the watershed.

Ecology has created the reserves through a determination that their establishment would serve the overriding consideration of the public interest (OCPI), as required by RCW 90.54.020(3)(a). The OCPI determination is necessary for new year-round withdrawals to occur in these subbasins, as they would impair flows needed for in-stream environmental values during low flow months. New uses drawing from the reserves must nevertheless mitigate the impact to streams from consumptive use.

The reserves sizes were developed by the Department of Fish and Wildlife and Ecology, and reflect a 1percent impact (loss) to habitat during the low flow period. The Dungeness Mainstem and Matriotti Creek would together have a combined reserve. The allocation of water in the reserves would allow a non-interruptible water right for qualifying domestic uses.

The maximum depletion amounts are not in addition to the reserves. The maximum depletion amounts are not to be exceeded, and they would work in conjunction with the reserves to allow for non-domestic water use under an Ecology approved mitigation plan. Over time, mitigation projects would be implemented to ensure the total impact of all new water use is kept below the maximum depletion amount. This ensures that spatial or temporal imperfections in approved mitigation plans and new domestic uses relying on the reservations do not result in adverse flow impacts that would exceed 1% loss of habitat. If the maximum depletion amount is fully depleted for any subbasin, unless water (i.e., “water for water”) is found for mitigation, no new water use that adversely affects the streamflow in that subbasin may begin. The concept of maximum depletion amounts is new to instream flow rules.

New permit-exempt well use may not occur where an existing municipal water supplier can provide service. Permit-exempt uses from the reserves must comply with the reserve criteria in WAC 173-518-070 and -085.

### ***Baseline***

Before the proposed rule, no reserves were established in the Dungeness subbasins. Permit-exempt users currently withdraw water as allowed by local regulations and state law under RCW 90.44.050, resulting in near-continuous, small, incremental adverse impacts to surface waters. Although exempt from permitting, permit-exempt groundwater remains subject to all other state water laws and rules in the future or remain subject to litigation if they impair senior water rights.

### ***Primary change***

Residential users are gaining a reliable water supply (uninterruptible) through the use of reserves and the mitigation requirement in the proposed rule. Ecology has a legislative mandate to set instream flows to protect instream resources. If the rule only established instream flow levels and did not establish reserves, maximum depletion amounts, and a mitigation framework, then a dependable, uninterrupted water supply for new domestic water rights would not be available.

The rule provides water for new withdrawals that meet the conditions of use for the reserves and maximum depletion amounts in WAC 173-518-080 and -085. The proposed rule requires potential new users to hook-up to a public water purveyor when possible.

The reserves and maximum depletion amounts also set a limit on the total impact to surface water resulting from new mitigated water use. This limit to total impact,

coupled with the mitigation requirement to reduce the impact even further, would result in permanent protection of instream resources.

## **Establishing maximum allocation amounts for the Dungeness Mainstem**

### ***Proposed rule***

The maximum allocation amounts establish the amount of water that can be captured when stream flows in the Dungeness Mainstem are generally expected to be at their highest. The amount of water captured cannot adversely impact the proposed instream flows and would only be available during the seasonal open period on the Mainstem Dungeness. Users seeking water from the maximum allocation must obtain a water right permit and, due to the relative infrequency of these high flows in the Dungeness River, the water use associated with such a permit may only be for interruptible purposes. These interruptible purposes include storage, and Dungeness mitigation and restoration projects.

### ***Baseline***

Currently, there are no conditions placed on the high flows, but water right permit applications are not being approved that would conflict with an administrative closure or have a flow limit proviso through a surface water source limitation issued under RCW 77.57.020.

### ***Primary Change***

The proposed rule would allow 25-35 cfs of high flows (varying by month) above the instream flow levels to be captured. This may provide water for storage, mitigation, and restoration projects, and would allow permit applications for these projects to be reviewed and approved if found effective in storage, mitigation, or restoration.

## **Storage Projects**

### ***Proposed rule***

The proposed rule includes a provision allowing new storage projects using water from the Dungeness River for environmental enhancement or other uses consistent with the watershed plan. Such projects are potentially not subject to the proposed instream flows, but are subject to a consultation process with Tribes and other resource agencies. The consultation process would form the basis for conditioning and monitoring of the new permit to store water.

### ***Baseline***

Currently, water right permit applications are not being approved.

### ***Primary change***

The proposed rule would allow flexibility for storage projects that are found to provide significant benefits to the community and the environment.

## Chapter 3: Likely Costs of the Proposed Rule

### 3.1 Introduction

Ecology estimated the expected costs associated with the proposed rule, as compared to the baseline as described in section 2.2 of this document. The baseline is the regulatory circumstances in the absence of the proposed rule. The cost analyzed here are associated with the proposed rule elements listed in section 2.4 of this document.

To the extent possible, Ecology has quantified these impacts, and has otherwise described them qualitatively to include in overall assessment of the costs of the proposed rule.

### 3.2 Growth in the basin

Many of Ecology's estimations of costs and benefits resulting from the proposed rule are based on projected household growth in the Dungeness, which would result in increased water use. See Appendix A for a map of subbasins in the affected region. Ecology used two bases to estimate projected growth:<sup>6</sup>

- Clallam County building permits
- Projected population growth

Using building permits from the region affected by the proposed rule,<sup>7</sup> Ecology projected one estimate of the number of households that would, each year, potentially rely on new permit-exempt groundwater uses. Ecology estimated this number by:

1. Summing the number of building permits using wells, other, or unnamed sources of water in each year 1987 – 2008.
2. Allocating areas across subbasins.
3. Averaging the number of building permits in each subbasin across all years.

Using projected population growth in the region affected by the proposed rule, Ecology projected an alternate estimate of the number of households that would, each year, potentially rely on new permit-exempt groundwater uses. Ecology estimated this number by:

1. Using projected population in each year in Sequim, and in unincorporated Clallam County. This accounted for higher likely growth in the Sequim area.<sup>8</sup>

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<sup>6</sup> Ecology also projected growth in the number of households a third way, using the Office of Financial Management's Low, Middle, and High population growth projections for Clallam county. Based on those growth projections, the area affected by the proposed rule would grow (at the Middle estimate) by 50 households per year. (The Low change in the number of households would be a reduction of 71 per year, while the High would increase the number of households by 131 per year.) Using this method to determine growth numbers would affect estimates of costs and benefits throughout this document by making them both smaller, but this method also does not account for the likely higher growth in urban areas as compared to Clallam County overall. Ecology, therefore, retained the two growth scenarios used

<sup>7</sup> Clallam County building permit data, 1987 – 2008.

<sup>8</sup> Aylward and Cronin, 2011.

2. Dividing by a household size of 2.21 people per household, to calculate the projected number of households in Sequim and in Clallam County areas of the Dungeness.
3. Subtracted across each year to calculate the household growth in each area.
4. Divided projected annual household growth in Sequim across Gierin and Bell subbasins. These are the two subbasins straddled by Sequim.
5. Apportioned projected household growth in unincorporated Clallam County (outside Sequim) across remaining subbasins based on the proportions of building permits in each of those subbasins.

**Table 3: Projected Growth in Permit-Exempt Water Use, by Subbasin (annual)**

	<b>Building-Permit Growth Scenario: Number of new building permits per year</b>	<b>Population Growth Scenario: Number of new domestic uses per year</b>
Bagley Creek Subbasin	12	17
Bell Creek Subbasin	13	112
Cassalery Creek Subbasin	18	26
Dungeness River and Matriotti Creek Subbasins	69	98
Gierin Creek Subbasin	12	97
McDonald Creek Subbasin	18	25
Siebert Creek Subbasin	20	28

Ecology used these numbers in calculating the impacts to fish under the proposed rule. In addition, to maintain conservative estimates of net benefit, Ecology subtracted the number of households likely to have domestic use supported under Sequim’s existing water right (209 households for 15 years), in calculations of metering and development.

Ecology also estimated the number of uses likely to significantly increase in permit-exempt water use. Based on Clallam County property sales records, 457 mobile homes in the area affected by the proposed rule sold since 2005 are located on residentially zoned land. These homes may, in future, choose to build a permanent house on site, and thereby require more water use. Ecology could not determine how many of these homes currently use a permit-exempt well, or how many would use one if they increased water use, and so conservatively assumed all of these mobile homes would build a permanent house on site in the next five years, as an upper bound.

### **3.3 Expected costs**

Ecology estimated costs likely to result from the proposed rule, associated with:

- Metering new permit-exempt uses.
- Fish losses in some areas.
- Increasing existing permit-exempt use.
- New permit-exempt users.

- Administering a water exchange market.

### **Metering new permit-exempt uses**

Ecology estimated the costs associated with metering new permit-exempt users. Ecology uses an estimate of \$500 per meter. This cost is not likely to vary by subbasin. Using the two projections of growth in the area affected by the proposed rule (see Table 3), Ecology estimated nominal costs of \$1.6 million – \$2.5 million, over 20 years. This would be the cost range if 20 years worth of new users installed meters today. Ecology then discounted this cost range, based on the flow of new permit-exempt users each year, over 20 years, at a social discount rate of 1.58 percent.<sup>9</sup> This gave Ecology a range of present-value costs, over 20 years, of \$1.4 million – \$2.1 million.

### **Fish losses in some areas**

Ecology estimated the costs associated with the proposed rule in areas where it is likely to result in lower quantities of water available to fish, and result in fish losses. While the proposed rule sets instream flows that are largely protective of salmon (see Chapter 4 for a discussion of this benefit), Ecology acknowledges that some areas of the affected subbasins are not likely to have sufficient and appropriate mitigation available under the proposed rule for new uses,<sup>10</sup> and would likely rely on the reserve for the 15 gpd consumptive amount for indoor domestic use. As compared to a baseline in which households developing in these areas would use 250 gpd of water, this is still an improvement, but the 15 gpd use for these households would still likely result in minor fish losses.

Based on projected growth in each subbasin (Table 3), the groundwater model (relating groundwater and surface water across the subbasins), and salmon habitat needs, Ecology estimated the proposed rule would result in the loss of 6 – 10 spawning fish over 20 years.<sup>11</sup> Ecology uses a 20-year value of a returning spawning salmon of \$5,000.<sup>12</sup> Ecology calculated the total cost of salmon losses under the proposed rule of \$30 thousand – \$50 thousand.

### **Increasing existing permit-exempt use**

Ecology estimated the costs associated with existing permit-exempt users increasing their permit-exempt use (and therefore creating a new use) in the future. This could result from additions to existing homes, building a home on a property currently using a mobile home, or subdividing a property to house multiple families (e.g., forming a duplex).

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<sup>9</sup> 1.58 percent is the average real rate of return on United States Treasury I-Bonds. This is an estimate of the risk free rate of return a person or business could receive on an investment, and is therefore the rate at which future receipts and payments are socially discounted in terms of current value.

<sup>10</sup> Upstream areas of Bagley, Siebert, McDonald, Matriotti, Dungeness, and Bell subbasins.

<sup>11</sup> The calculations of fish losses are included in the rule file for this rulemaking.

<sup>12</sup> Based on a University of Washington study (Layton, *et al.* 1999), the 20-year average between high and low status quo salmon populations give us \$300 as the annual value for each adult spawner. Columbia River Initiative gave us existence values of \$268 (Huppert, 2004). Bonneville Power Administration gave us restoration values of \$400 per adult fish. From these reports 16 year values for fish would range from \$4,288 to \$6,400. Ecology has chosen to use a 20-year real estimated value of \$5,000 for an adult returning spawner.

Ecology estimated the lowest number of existing users increasing permit-exempt water use in the future as zero. This was based on the fact that one of the estimates of future household growth is based on population growth, and therefore already reflects growth in water use among existing users. (Population growth reflects both people moving to the area, who would move into duplexes or second residences on a property, and families getting larger and requiring larger houses and more water.)

Ecology alternately estimated the number of existing users increasing permit-exempt water use in the future based on existing residentially zoned properties with mobile homes purchased since 2005. Based on Clallam County property sales records, 457 mobile homes in the area affected by the proposed rule sold since 2005 are located on residentially zoned land. These homes may, in the future, choose to build a permanent house on site, and thereby potentially require more water use. Ecology could not determine how many of these homes currently use a permit-exempt well, or how many would use one if they increased water use, and so conservatively assumed all of these mobile homes would build a permanent house on site in the next five years, as an upper bound.

From an analysis done by the Local Leaders Water Management Work Group (LLWG), of prospective project types, Ecology used a range of \$1,500 – \$16,500 per acre-foot (AF). This is the full range of “middle” estimates of cost per acre-foot, for projects rated with “high” or “very high” effectiveness in mitigation. Assuming a typical household would use 250 gpd, this means mitigation would likely require a purchase of 0.28 AF per household, or a cost of \$420 – \$4,620 per household.

This estimate is likely an overestimate of actual costs, because:

- Not all existing households increasing water use in the future would be likely to increase by the full water use of a typical household, as they would have an already established a permit-exempt water use level.
- Mitigation would be required for only consumptive use, which would be some subset of the 250 gpd total water use in a household.

Because Ecology could not determine the degree to which households might consume less than 250 gpd, Ecology chose to use the conservatively high cost.<sup>13</sup>

Ecology multiplied the number of existing permit-exempt users likely to increase permit-exempt water use in the future (up to 457; recalling that the low-end estimate was zero; see above) by the range of per-household costs, and discounted this value over time, at a social discount rate of 1.58 percent. The range of 20-year present value costs would be \$0 – \$2.0 million if all of these households had mitigation available. Ecology estimated, however, that about 93.8 percent of households would be able to mitigate, while the rest

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<sup>13</sup> When unable to make more precise estimates (due to uncertainty or data limitations), Ecology chose to overestimate costs and underestimate benefits, to conservatively estimate net benefits of the proposed rule.

(6.2 percent) would have to rely on the indoor domestic use reservation, and forego outdoor water use at a cost of \$1,000 per household.<sup>14</sup>

The final present value, then, of mitigation (where available) or foregoing outdoor water use (where necessary) was a total cost, over 20 years, of \$0 – \$1.9 million to existing permit-exempt households.

### **New permit-exempt users**

Ecology estimated the costs associated with new permit-exempt users in the area affected by the proposed rule in the future. This could result from population growth in the area, as well as people moving into the area.

Ecology used the projected range of growth in permit-exempt users (households) discussed in this document (see Table 3). Ecology accounted for new population that would likely use Sequim’s existing water right by subtracting 15 years of 209-person growth from population-based growth in the Gierin and Bell subbasins from the projections in Table 3. The proposed rule would require people with access to such a system to connect to it, rather than rely on a permit-exempt well.

After the Sequim water right was fully in use, however, these new households could use permit-exempt wells. This adjustment resulted in the Gierin and Bell subbasins effectively experiencing zero growth in permit-exempt uses for the first 15 years under the proposed rule, under the population-based growth projection.<sup>15</sup>

New permit-exempt water uses would be required to mitigate use under the proposed rule. From an analysis done by the Local Leaders Water Management Work Group, of prospective mitigation project types, Ecology used a range of \$1,500 – \$16,500 per acre-foot (AF). This is the full range of “middle” estimates of cost per AF, for projects rated with “high” or “very high” effectiveness in mitigation. Assuming a typical household would use 250 gpd, this means mitigation would likely require a purchase of 0.28 AF per household, or a cost of \$420 – \$4,620 per household.

This estimate is likely an overestimate of actual costs, because mitigation would be required for only consumptive use, which would be some subset of the 250 gpd total water use in a household. Because Ecology could not determine the degree to which households might consume less than 250 gpd, Ecology chose to use the conservatively high cost<sup>16</sup>

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<sup>14</sup> Willingness to pay for outdoor water use was based on the analysis provided in Zhang, 2005. Ecology used this willingness to pay value, because replacement costs for services such as trucking in water and water storage for outdoor use were higher, and households would only purchase these replacement services if their willingness to pay exceeded the costs. As a result, Ecology performed calculations based on households without mitigation foregoing purchasing replacement water.

<sup>15</sup> This affected the present-value calculation, as these subbasins were not expected to experience costs resulting from this particular impact of the proposed rule until 2028, when a typical new household could no longer rely on Sequim’s existing water right.

<sup>16</sup> When unable to make more precise estimates (due to uncertainty or data limitations), Ecology chose to overestimate costs and underestimate benefits, to conservatively estimate net benefits of the proposed rule.

Ecology multiplied the number of new permit-exempt users in each year, by the range of per-household costs, and discounted the value over time, at a social discount rate of 1.58 percent. The range of 20-year present value costs would be \$1.2 million – \$18.8 million if all of these households had mitigation available. Ecology estimated, however, that about 93.8 percent of households would be able to mitigate, while the rest would have to rely on the indoor domestic use reservations, and forego outdoor water use at a cost of \$1,000 per household.<sup>17</sup>

The final present value, then, of mitigation (where available) or foregoing outdoor water use (where necessary) was a total cost, over 20 years, of \$1.3 million – \$17.9 million to new permit-exempt use households.

### **Administering a water exchange market**

Ecology estimated the costs associated with administering a water exchange market to facilitate mitigation of new water uses and processing water rights. This cost would be borne by Ecology and by Clallam County. Ecology estimated that administering the market would require:

- Ecology: Two full-time-equivalent (FTE) Environmental Specialist 4 (ES4) for the first two years, and one thereafter.
- Clallam County: The equivalent of 0.5 FTE Environmental Planner 1 (EP1)

Ecology based salary assumptions on the salary schedules of represented employees:

- Top-step annual salary of \$64,428 for an ES4.
- Top-step annual salary of \$43,368 for an EP1.

Ecology calculated additional overhead costs for each FTE employee based on the Standard Cost Assumptions for fiscal note preparation created by the Washington State Office of Financial Management. (These are the cost assumptions recommended for calculating costs presented to the state Legislature.) Overhead costs included:

- Benefits
- Goods and services
- Travel
- Indirect costs of rents, utilities, executive and administrative support, employee services, communications, budget and accounting, and central services.

Including overhead costs and salary in the cost calculation, Ecology used the following costs associated with each FTE administering the water exchange.

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<sup>17</sup> Willingness to pay for outdoor water use was based on the analysis provided in Zhang, 2005. Ecology used this willingness to pay value, as replacement costs for services such as trucking in water and water storage for outdoor use were higher, and households would only purchase these replacement services if their willingness to pay exceeded the costs. As a result, Ecology performed calculations based on households without mitigation foregoing purchasing replacement water.

- \$121,358 annually for an ES4.
- \$83,684 annually for an EP1.

Discounting these costs over time, and accounting for the number and type of FTE required to administer the water exchange, Ecology calculated total present-value costs over 20 years of \$3.1 million.

### 3.4 Total expected costs

Ecology calculated total expected costs associated with the proposed rule, in present value, over 20 years as shown in the Table 4 below.

**Table 4: Total Costs of the Proposed Rule (20-year present values)**

<b>Cost</b>	<b>Based on Building-Permit Growth Projection</b>	<b>Based on Population-Based Growth Projection</b>
Metering new permit-exempt uses	\$1,383,432	\$2,088,795
Fish losses in some areas	\$30,000	\$50,000
Increasing existing permit-exempt use	\$1,916,958	\$17,915,569*
New permit-exempt users	\$1,261,579	
Administering a water exchange market	\$3,064,703	\$3,064,703
<b>TOTAL</b>	<b>\$7,656,672</b>	<b>\$23,119,067</b>

\*This value accounts for population-based growth projections including increases to existing use and new uses.



## Chapter 4: Likely Benefits of the Proposed Rule

### 4.1 Introduction

Ecology analyzed the benefits of the proposed rule, compared to the baseline as described in section 2.2 of this document. The baseline is the regulatory circumstances in the absence of the proposed rule. The cost analyzed here are associated with the proposed rule elements listed in section 2.4 of this document.

To the extent possible, Ecology has quantified these impacts, and has otherwise described them qualitatively to include in overall assessment of the costs of the proposed rule.

### 4.2 Growth in the basin

Many of Ecology's estimations of costs and benefits resulting from the proposed rule are based on projected household growth in the Dungeness, which would result in increased water use. See Appendix A for a map of subbasins in the affected region. Ecology used two bases to estimate projected growth:<sup>18</sup>

- Clallam County building permits.
- Projected population growth.

Using building permits from the region affected by the proposed rule,<sup>19</sup> Ecology projected one estimate of the number of households that would, each year, potentially rely on new permit-exempt groundwater uses. Ecology estimated this number by:

1. Summing the number of building permits using wells, other, or unnamed sources of water in each year 1987 – 2008.
2. Dividing permits across subbasins.
3. Averaging the number of building permits in each subbasin across all years.

Using projected population growth in the region affected by the proposed rule, Ecology projected an alternate estimate of the number of households that would, each year, potentially rely on new permit-exempt groundwater uses. Ecology estimated this number by:

1. Using projected population in each year in Sequim, and in unincorporated Clallam County. This accounted for higher likely growth in the Sequim area.<sup>20</sup>

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<sup>18</sup> Ecology also projected growth in the number of households a third way, using the Office of Financial Management's Low, Middle, and High population growth projections for Clallam county. Based on those growth projections, the area affected by the proposed rule would grow (at the Middle estimate) by 50 households per year. (The Low change in the number of households would be a reduction of 71 households per year, which the High change in the number of households would be 131 new households per year.) Using this method to determine growth numbers would affect estimates of costs and benefits by making them smaller, but this method also does not account for the likely higher growth in urban areas as compared to Clallam County overall.

<sup>19</sup> Clallam County building permit data, 1987 – 2008.

<sup>20</sup> Aylward and Cronin, 2011.

2. Dividing by a household size of 2.21 people per household, to calculate the projected number of households in Sequim and in Clallam County areas of the Dungeness.
3. Subtracted across each year to calculate the household growth in each area.
4. Divided projected annual household growth in Sequim across Gierin and Bell subbasins. These are the two subbasins straddled by Sequim.
5. Apportioned projected household growth in unincorporated Clallam County (outside Sequim) across remaining subbasins based on the proportions of building permits in each of those subbasins.

**Table 5: Projected Growth in Permit-Exempt Water Use, by Subbasin (annual)**

	<b>Building-Permit Growth Scenario: Number of new building permits per year</b>	<b>Population Growth Scenario: Number of new domestic uses per year</b>
Bagley Creek Subbasin	12	17
Bell Creek Subbasin	13	112
Cassalery Creek Subbasin	18	26
Dungeness River and Matriotti Creek Subbasins	69	98
Gierin Creek Subbasin	12	97
McDonald Creek Subbasin	18	25
Siebert Creek Subbasin	20	28

Ecology used these numbers in calculating the impacts to fish under the proposed rule. In addition, to maintain conservative estimates of net benefit, Ecology subtracted the number of households likely to have domestic use supported under Sequim’s existing water right (209 households for 15 years), in calculations of development values.

Ecology also estimated the number of uses likely to significantly increase in permit-exempt water use. Based on Clallam County property sales records, 457 mobile homes in the area affected by the proposed rule sold since 2005 are located on residentially zoned land. These homes may, in future, choose to build a permanent house on site, and thereby require more water use. Ecology could not determine how many of these homes currently use a permit-exempt well, or how many would use one if they increased water use, and so conservatively assumed all of these mobile homes would build a permanent house on site in the next five years, as an upper bound.

### **4.3 Expected benefits**

Ecology estimated benefits likely to result from the proposed rule, associated with:

- Avoided fish losses.
- Increased certainty in development.
- Avoided legal costs.
- Protecting existing restoration.

- Beneficial storage projects.

### **Avoided fish losses**

By setting instream flows, the proposed rule is likely to provide more salmon habitat and therefore prevent fish loss. Ecology estimated the benefits associated with the proposed rule's protection of salmon. Ecology compared the proposed rule's mitigation and reservations allowing for up to 15 gpd of domestic use, to the baseline of 250 gpd of unmitigated use for each new permit-exempt water use projected in the affected area. Ecology used the growth projection range for each subbasin (Table 5), the groundwater model (relating groundwater and surface water across the subbasins), and salmon habitat needs, to estimate that the proposed rule would result in 751 – 1,369 spawning fish saved over 20 years. Ecology uses a 20-year value of a returning spawning salmon of \$5,000.<sup>21</sup> Ecology calculated the total benefit of avoided salmon losses under the proposed rule of \$3.8 million – \$6.8 million.

### **Increased certainty in development**

Under the baseline, future development in the Dungeness basin is at risk for lack of water availability, causing impairments, and lawsuits. As more development occurs across the subbasins, there is more risk of a permit-exempt use impairing a senior water right, but also there is risk that a larger (basin-wide) lawsuit would be brought by a tribe or at the federal level (e.g., because of salmon loss and tribal claims to instream flow to support the treaty right to take fish), that would halt future development in the basin. By requiring mitigation of new water uses, and therefore maintaining more water instream, the proposed rule reduces the likelihood of a lawsuit or a successful lawsuit.

### **Curtailment**

While, under the baseline, junior water rights (including established permit-exempt rights) are subject to curtailment, Ecology has not curtailed permit-exempt water use in the Dungeness. Since it could not, therefore, confidently estimate the degree to which curtailment would occur under the baseline, Ecology did not quantify the most likely value of increased certainty in avoiding water use limitations (curtailment in low-water years). This value, however, to each new user would be the percentage reduction in the likelihood of curtailment, multiplied by the net value of improving a property using additional water.

The average value of residential improvements minus the costs of construction in the Dungeness is nearly \$33 thousand.<sup>22</sup> For illustrative purposes (not included in the quantitative assessment of benefits in this document), if the certainty of a reliable and ongoing supply of water (not occasionally interrupted, or possibly subject to suit by a

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<sup>21</sup> Based on a University of Washington study (Layton, *et al.* 1999), the 20-year average between high and low status quo salmon populations give us \$300 as the annual value for each adult spawner. Columbia River Initiative gave us existence values of \$268 (Huppert 2003). Bonneville Power Administration gave us restoration values of \$400 per adult fish. From these reports 16 year values for fish would range from \$4,288 to \$6,400. Ecology has chosen to use a 20-year real estimated value of \$5,000 for an adult returning spawner.

<sup>22</sup> Ecology started with the average value of a residential improvement in the affected areas, and subtracted the average cost of construction as a percentage of housing value (National Association of Home Builders, 2011).

senior water-right holder) was increased by 1 percent, new future developers using permit-exempt water would benefit \$0.9 million – \$1.3 million in present value over 20 years. Existing permit-exempt water users seeking to use more water in the future could benefit up to \$127 thousand in present value over 20 years.<sup>23</sup> If the likelihood was reduced by 10 percent, the benefits would be ten times those above.

### ***Development ban***

Ecology estimated the value of increased certainty in development arising from reduced likelihood that a large lawsuit would limit or ban future development in the basin. This large suit could be filed based on infringement on time immemorial tribal water rights, or federal protection of salmon and their watersheds. Under the baseline, such a lawsuit (and its success) becomes increasingly likely over time, as the forecast growth in households using permit-exempt wells (see Table 5) reduces streamflows without any required mitigation. The proposed rule reduces this likelihood by setting protective instream flows, and requiring mitigation of new water uses. While new water users would have to pay for mitigation, they would gain the benefits of development (property value and use of the improvement).

Ecology estimated the reduced likelihood of a large lawsuit based on a behavioral model of the decision whether to litigate. The model compared the costs associated with a lawsuit (less the benefit of avoiding fish losses in some upstream areas; see Chapter 3 for details), to the benefits of salmon saved by a ban on development. Ecology estimated that the baseline risk of a lawsuit was 14.1 – 27.7 percent.<sup>24</sup>

Ecology accounted for new population that would likely use Sequim’s existing water right by subtracting 15 years of 209-person growth from population-based growth in the Gierin and Bell subbasins from the projections in Table 4. The proposed rule would require people with access to such a system to connect to it, rather than rely on a permit-exempt well. After the Sequim water right was fully in use, however, these new households could use permit-exempt wells. Ecology made this adjustment to maintain overall conservative estimates of net benefits (these growth values are used in both cost and benefit calculations). This adjustment resulted in the Gierin and Bell subbasins effectively experiencing zero growth in permit-exempt uses for the first 15 years under the proposed rule, under the population-based growth projection.<sup>25</sup>

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<sup>23</sup> Future households: 3,249 annual future households, benefitting \$33 thousand each, discounted as a uniform flow over 20 years. Existing households: 457 households, benefitting \$33 thousand each, discounted as a uniform flow over 20 years.

<sup>24</sup> Ecology allowed for the suit to occur in any year in the coming 20 years, and last up to 20 years, using a Monte Carlo simulation that iterated random length and timing of a suit and counted the frequency with which a suit occurred. Ecology estimated that, based on this decision structure, a suit would occur with 14.1 – 27.7 percent likelihood. The proposed rule would reduce these frequencies to zero by allocating instream water rights and requiring mitigation. This range depends on the number of fish lost or saved under the proposed rule. Ecology used this range as the reduced likelihood of a large lawsuit banning development through closing the basin to new water use.

<sup>25</sup> This affected the present-value calculation, as these subbasins were not expected to experience costs resulting from this particular impact of the proposed rule until 2028, when a typical new household could no longer rely on Sequim’s existing water right.

For each of the next 20 years, Ecology multiplied the reduction in the likelihood of banning development, by the projected number of new households, and the value of being able to develop. The average value of residential improvements minus the costs of construction in the Dungeness is nearly \$33 thousand.<sup>26</sup> Just having water does not alone create a property improvement, but gives the developer the ability to spend money on construction inputs to create that improvement; the value of being able to improve, therefore is the difference between the value of the improvement and what it cost to build the improvement.

Ecology estimated that new water users (including brand-new uses and increasing existing uses under any water source) would benefit from increased certainty in development by \$19.9 million – \$62.1 million in present value over 20-years.

### **Avoided legal costs**

Ecology estimated the value of avoiding legal costs of a lawsuit of the type described above. Such a large suit could be filed based on infringement on time immemorial tribal water rights, or federal protection of salmon and their watersheds. Ecology used the same 14.1 – 27.7 percent reduction in the likelihood of such a suit (see previous subsection, “Development Ban”), multiplied by the prospective costs of a large-long-term suit of \$20 million.<sup>27</sup> Based on these values, Ecology calculated that avoiding a large lawsuit over 20 years would result in \$2.4 million – \$4.7 million in avoided legal costs in the state.

### **Protecting existing restoration**

Existing habitat restoration in the river and stream waters of the Dungeness and connected subbasins is worth \$20.5 million in capital expenditures.<sup>28</sup> The proposed rule would protect these existing investments from loss or reduced effectiveness, by setting protective instream flows in the basin and requiring mitigation of new water uses including permit-exempt groundwater uses.

### **Beneficial storage projects**

Ecology could not confidently determine the extent or qualities of likely future storage projects with a sufficient degree of certainty. Storage projects that benefit both instream and out-of-stream uses, however, would be possible under the proposed rule. This benefit is included qualitatively.

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<sup>26</sup> Ecology started with the average value of a residential improvement in the affected areas, and subtracted the average cost of construction as a percentage of housing value.

<sup>27</sup> Based on legal costs over time in Yakima averaged to \$1 million per year. *Department of Ecology v. Acquavella*, Yakima County Superior Court No. 77-2-01484-5.

<sup>28</sup> Ecology list of capital expenditures on existing salmon habitat recovery projects in the Dungeness basin.

#### 4.4 Total expected benefits

Ecology calculated total expected benefits associated with the proposed rule, in present value, over 20 years as shown in Table 6 below.

**Table 6: Total Benefits of the Proposed Rule (20-year present values)**

<b>Benefit</b>	<b>Based on Building-Permit Growth Projection</b>	<b>Based on Population-Based Growth Projection</b>
Avoided fish losses	\$3,755,000	\$6,845,000
Increased certainty in development	\$19,867,471	\$62,050,161
Avoided legal costs	\$2,401,794	\$4,718,419
Protecting existing restoration	\$20,511,415	\$20,511,415
Potential value of avoided curtailment		
Potential value of beneficial storage projects		
<b>TOTAL QUANTIFIABLE</b>	<b>\$46,535,680</b>	<b>\$94,124,995</b>

## Chapter 5: Cost-Benefit Comparison and Conclusions

### 5.1 Introduction

As discussed in Chapter 1, the Washington Administrative Procedure Act (RCW 34.05.328) requires Ecology to evaluate significant legislative rules to “[d]etermine that the probable benefits of the rule are greater than its probable costs, taking into account both the qualitative and quantitative benefits and costs, and the specific directives of the statute being implemented.”

### 5.2 Estimated costs

As described in Chapter 3, Ecology estimated total costs of \$7.7 million – \$23.1 million associated with the proposed rule. These costs are in present value terms, over 20 years. See Table 4.

### 5.3 Estimated benefits

As described in Chapter 4, Ecology estimated total benefits of \$46.5 million – \$94.1 million associated with the proposed rule. These benefits are in present value terms, over 20 years. See Table 4.

### 5.4 Final comments and conclusion

Based on qualitative and quantitative assessment of the likely costs and benefits, Ecology concludes that there is reasonable likelihood that estimated benefits of the proposed rule exceed its costs.

#### Reliance of conclusion on water exchange

This conclusion relies heavily on the function of a water exchange market for mitigation. Ecology also calculated the impacts of the proposed rule without a water exchange market, and in that case, costs would greatly exceed benefits (largely due to inability to mitigate new uses resulting in basin-wide reliance on the indoor domestic water reserves, and the almost immediate depletion of those reserves terminating any ability to develop within the basin without a pre-existing, permanent, senior water right). Based on available evidence, however, Ecology believes the water exchange market will adequately function to support the mitigation and development assumptions used in the analysis in Chapters 3 and 4 of this document.<sup>29</sup>

This evidence includes:

- A multi-faceted assessment of long-run supply and demand for mitigation (with demand corresponding to the population-based (and highest) growth projections used in Ecology’s analysis).
- Assessment of the pricing of mitigation with “high” or “very high” success.
- Inclusion of the costs of administering a water exchange in Ecology’s analysis.

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<sup>29</sup> This means Ecology assumed adequate mitigation would be available for 93.8 percent of new users, and the remaining 16.2 percent would rely on reserves, because they would have difficulty finding sufficient and appropriate mitigation.

- The basing of mitigation quality and appropriateness on a data-based groundwater model, relating the subbasins, straights, and surface water in the basin.

Based on these sources and their contribution to Ecology's analysis, Ecology believes it is likely that a water exchange market with sufficient and adequate mitigation will function in the Dungeness and associated subbasins. Therefore, Ecology believes there is sufficient evidence that the benefits of the proposed rule exceed the costs.

## Chapter 6: Least Burdensome Alternative Analysis

### 6.1 Introduction

RCW 34.05.328(1)(d) requires Ecology to "...[d]etermine, after considering alternative versions of the rule and the analysis required under (b) and (c) of this subsection, that the rule being adopted is the least burdensome alternative for those required to comply with it that will achieve the general goals and specific objectives stated under (a) of this subsection."

Ecology assessed alternatives to the proposed rule, and determined whether they met the general goals and specific objectives of the authorizing statute. Of those that would meet these objectives, Ecology determined whether the proposed rule were the least burdensome.

This proposed rule would be enacted under the authority of RCW 90.54.020, and RCW 90.82.080 is intended to carry out the fundamentals listed in RCW 90.54.020. The fundamentals of particular importance in this rulemaking include:

- Preserving and protecting adequate and safe water supplies to satisfy human domestic needs (RCW 90.54.020(5)).
- Protecting the quality of the natural environment, including retaining base flows in rivers and streams to preserve fish, wildlife, and other environmental values (RCW 90.54.020(3)(a)).
- Giving full recognition in the administration of water allocation and use programs to the natural interrelationships of surface and groundwaters (RCW 90.54.020(9)).

The decision to propose a water management rule for the east WRIA 18 watersheds is based on the following interrelated factors:

- Ecology is obligated pursuant to RCW 90.82.130(3) to propose a rule to implement recommendations in the WRIA 18 watershed management plan adopted by the watershed planning unit and the Clallam County Commission.
- Ecology is required by RCW 90.54.020 to protect perennial streams and rivers with base flows adequate to protect fisheries and other aquatic resources. Without a rule or a successful lawsuit by one or more parties to protect senior water rights including federal instream flow rights, new groundwater uses will increase stream flow reductions during periods when flows in the Dungeness River and several small streams on the Dungeness alluvial fan are below the level necessary to protect fisheries that rely on existing habitat.

The major elements of the proposed rule are:

- **Set instream flows and close surface waters to new diversions.** Adopt instream flow levels recommended in the 2005 Elwha-Dungeness Watershed Plan. The Dungeness River would be closed to new diversions from July 15 to November 15. Smaller rivers would be closed all year.

- **Require mitigation for all new consumptive use of water, including permit-exempt withdrawals.** Mitigation through the Dungeness water exchange would be allowed, or individuals could propose their own mitigation. Mitigation obligations and credits would be calculated using the Dungeness groundwater model.
- **Establish reserves of water for future domestic use.** Reserves would allow flexibility for new domestic uses of water to start immediately after rule adoption, and in places where water-for-water mitigation was available.
- **Set maximum allocations from the Mainstem Dungeness during the open period.** New diversions from the Dungeness during the open period would be subject to instream flows, meaning the diversion would be required to cease when instream flows were not met. In addition, to protect channel forming flows, a total maximum allocation of 25 cfs could be diverted from November 16 to April 30, and 35 cfs from May 1 to July 14.
- **Maximum depletion amounts for the Dungeness River and small streams.** Maximum depletion amounts limit the maximum future impact to surface waters from future groundwater uses, to 1 percent of the low observed or estimated stream flow. The maximum depletion amount would enable Ecology to approve mitigation plans where the mitigation plan did not offset all predicted impacts in all affected subbasins, but the mitigation plan was otherwise water budget-neutral as defined in the rule, while limiting the total amount of future impact that may be authorized through mitigation plan approval.
- **Allow storage projects.** New storage projects for environmental enhancement or other uses consistent with the watershed plan could be allowed. Such projects would potentially not be subject to instream flows, but subject to a consultation process with the tribes and other resource agencies, conditioning, and monitoring.
- **Require measuring new water use.** All new uses of water would need to be metered.
- **Require new users to first request service from a public water supply.** If public water supply is not available, then new uses from private wells are allowed.

## 6.2 Alternatives considered

The proposed rule includes obligations Ecology accepted (as a governmental entity participating in the watershed planning process) when it consented to the watershed plan. The proposed rule is also based on additional available information from several years of continuing dialogue among the Dungeness River Executive Council and the Local Leaders Working group. Ecology considered alternative rule contents that would address the above concerns through rulemaking:

- **No action.**
- **No mitigation:** Ecology considered proposing a rule with a reservation for domestic use that did not include a mitigation requirement.

- **Use of deeper aquifers:** Ecology considered proposing a rule with a requirement for new groundwater users to use of the second or third aquifers where the deeper aquifers are available, as recommended in the watershed plan and by the LLWG.
- **Lower minimum instream flows:** Ecology considered proposing a rule with lower minimum instream flows for the Dungeness River than the recommended flows in the watershed plan.
- **No water measurement:** Ecology considered proposing a rule that did not require measuring new water use.
- **The proposed rule:** Ecology considered the rule contents currently being proposed.

Each of these options is described in greater detail below, with a discussion of whether and why it was included in the proposed rule language.

### **No action**

Ecology determined that taking no action was not appropriate because it would not protect base flows in perennial streams as directed by RCW 90.54.020, nor would it fulfill the obligations accepted under RCW 90.82.130.

### **No mitigation**

Adopting a rule with a reservation for domestic use that did not include a mitigation requirement would result in a reservation that, on one smaller stream, would be depleted before the 20-year planning horizon if growth rates in the rural areas continue at the current rate. This alternative would not implement the planning unit recommendation to replenish or repay the reservations through a later water management action, nor would it provide a basis for funding such water management actions.

This alternative would not require (nor provide for) a means of replacement of the reservations, reducing the cost to new domestic users. Once any of the reservations are exhausted, mitigation would be required for new domestic water uses. Compared to the proposed rule, a trend of increasing risk to federal reserved rights to instream flow for fisheries in the tribes' usual and accustomed fishing areas and to other existing rights to surface water, particularly in the smaller streams, would continue.

### **Use of deeper aquifers**

Ecology considered a rule requirement for new groundwater users to withdraw water from the second or third aquifers where the deeper aquifers are available. This alternative would implement recommendations from the watershed plan and the LLWG.

This alternative would result in an overall reduction in the amount of impacts to closed surface waters, but a more widely distributed impact across the watershed. This could result in impacts to smaller streams where mitigation is not available, and, if reserves for those streams are depleted, could restrict development in the watershed.

It would also result in improved quality of potable water from new wells drilled in areas with high nitrate levels in the shallow aquifer. However, this requirement results in an increased cost of approximately \$10,000 for each new well drilled where deeper aquifers are available.

### **Lower minimum instream flows**

Lower minimum instream flows would provide reduced levels of fisheries protection with respect to new future uses by reducing the minimum instream flows to as low as 105 cfs.

This alternative would not result in a reliable supply of water for new domestic water users. It would improve reliability for other types of new water users. Periodic curtailment of these non-domestic uses would still be necessary.

### **No water measurement**

Not requiring measuring of new water use would reduce construction costs for new water users, and eliminate the costs to maintain a flow meter. To achieve equivalent assurance from the mitigation program without water use metering, an increase in the amount of mitigation to offset the lack of verification would be needed. Consequently, this alternative would only reduce the overall burden on water users required to comply with the rule if it was combined with no mitigation requirement.

### **The proposed rule**

The watershed plan for the Dungeness includes recommendations for a “Future Water Availability Framework” that includes the use of a domestic water reservation with later replacement through “storage, reclamation, desalinization, saved water or other means of providing water supply that does not impinge on limited surface waters.” In the proposed rule, the mitigation requirement tied to the use of the reservation accomplishes this watershed plan recommendation.

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# Appendix A: Map of Proposed Rule Area

