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January ~~20~~ 21, 2014

HAND DELIVERED

Ms. Bari Schreiner
Rules Coordinator
Department of Ecology
P. O. Box 47600
Olympia, WA 98504-7600

Re: Petition for Rule Amendment, WAC chapter 173-518

Dear Ms. Schreiner:

Enclosed is a Petition for Amendment of a State Administrative Rule submitted on behalf of the Olympic Resource Protection Council (ORPC).

If you have any questions, please do not hesitate to call me or ORPC's local counsel, Kristina Nelson-Gross (whose contact information is listed on the Petition).

Sincerely,

TUPPER MACK WELLS PLLC

SARAH E. MACK

Enclosures

cc (w/enc): Maia Bellon, Director
Tom Loranger
Alan Reichman

4815-1698-6392, v. 1

PETITION FOR ADOPTION, AMENDMENT, OR REPEAL OF A STATE ADMINISTRATIVE RULE

Print Form

In accordance with RCW 34.05.330, the Office of Financial Management (OFM) created this form for individuals or groups who wish to petition a state agency or institution of higher education to adopt, amend, or repeal an administrative rule. You may use this form to submit your request. You also may contact agencies using other formats, such as a letter or email.

The agency or institution will give full consideration to your petition and will respond to you within 60 days of receiving your petition. For more information on the rule petition process, see Chapter 82-05 of the Washington Administrative Code (WAC) at http://apps.leg.wa.gov/wac/default.aspx?cite=82-05.

CONTACT INFORMATION *(please type or print)*

Petitioner's Name: Olympic Resource Protection Council, c/o Kristina Nelson-Gross

Name of Organization: Olympic Resource Protection Council

Mailing Address: P. O. Box 3010

City: Sequim State: WA Zip Code: 98382

Telephone: (360) 477-2103 Email: kristina@kng-law.com

COMPLETING AND SENDING PETITION FORM

- Check all of the boxes that apply.
- Provide relevant examples.
- Include suggested language for a rule, if possible.
- Attach additional pages, if needed.
- Send your petition to the agency with authority to adopt or administer the rule. Here is a list of agencies and their rules coordinators: http://www.leg.wa.gov/CodeReviser/Documents/RClist.htm.

INFORMATION ON RULE PETITION

Agency responsible for adopting or administering the rule: Department of Ecology

☐ **1. NEW RULE - I am requesting the agency to adopt a new rule.**

☐ The subject (or purpose) of this rule is: _____

☐ The rule is needed because: _____

☐ The new rule would affect the following people or groups: _____

☒ **2. AMEND RULE - I am requesting the agency to change an existing rule.**

List rule number (WAC), if known: WAC chapter 173-518, the Dungeness water management rule

☒ I am requesting the following change: See attached.

☒ This change is needed because: the existing rule is not consistent with state law or legislative intent. See attached.

☒ The effect of this rule change will be: balanced and equitable basin regulations consistent with state law as interpreted by the Washington Supreme Court in Swinomish Indian Tribal Community v. Dept. of Ecology, ___ Wn.2d ___, 311 P.3d 6 (2013).

☒ The rule is not clearly or simply stated: See attached.

☐ **3. REPEAL RULE - I am requesting the agency to eliminate an existing rule.**

List rule number (WAC), if known: _____

(Check one or more boxes)

☐ It does not do what it was intended to do.

☐ It is no longer needed because: _____

☐ It imposes unreasonable costs: _____

☐ The agency has no authority to make this rule: _____

☐ It is applied differently to public and private parties: _____

☐ It conflicts with another federal, state, or local law or rule. List conflicting law or rule, if known: _____

☐ It duplicates another federal, state or local law or rule. List duplicate law or rule, if known: _____

☐ Other (please explain): _____

ATTACHMENT TO PETITION FOR RULE AMENDMENT

WAC chapter 173-518

OLYMPIC RESOURCE PROTECTION COUNCIL

Introduction

The Olympic Resource Protection Council (ORPC) is a non-profit organization whose members include owners of property and businesses within Water Resource Inventory Area (WRIA) 18 in Clallam County east of Morse Creek. ORPC has been critical of the existing Dungeness water management rule, WAC chapter 173-518, because of its significant and unnecessarily costly impacts on Clallam County residents seeking to develop or redevelop their properties consistent with county land use designations and planning policies. Now, with the Washington Supreme Court's recent ruling in the *Swinomish v. Ecology* case, ORPC's original criticisms are heightened by concerns regarding the lack of legal authority for the rule.

ORPC seeks to engage with the Department of Ecology and other stakeholders to craft a balanced, lawful, and effective water management regulation for the Dungeness Basin. For the following reasons, the existing rule must be amended.

I. The Dungeness water management rule is fatally flawed because it rests upon a system of "OCPI"-based water reservations that are *ultra vires* under *Swinomish v. Ecology*.

The underlying premise of the Dungeness rule is that the impacts on the local economy and on rural residential development of highly restrictive minimum instream flows (and rule-based closures predicated on such flows) can be alleviated by a package of domestic use "reserves" adopted in reliance on "overriding considerations of the public interest" ("OCPI") pursuant to RCW 90.54.020(3)(a). WAC 173-518-080 provides in pertinent part as follows:

> Ecology has weighed the public interest supported by providing a limited amount of water for domestic water supply against the potential for negative impact to instream resources. *Ecology finds that the public interest advanced by these limited reserves clearly overrides the potential for negative impacts on instream resources. (RCW 90.54.020(3)(a).)*
>
> Based on this finding, ecology hereby reserves specific quantities of groundwater for future domestic supply only. *These reserves of water are not subject to the instream flows established in WAC 173-518-040 or closures established in WAC 173-518-050.*

WAC 173-518-080(1) (emphasis added).

Ecology's *Concise Explanatory Statement, Chapter 173-518 WAC* (Ecology Publication No. 12-11-039, November 2012) ("CES")[1] reiterates the OCPI basis for the domestic water reservations. CES at 48 (response to Comment 39).[2] The *Concise Explanatory Statement* also underscores the direct linkage between those OCPI-based reservations and the rule's minimum instream flows and closures. *See, e.g.*, CES at 75 (response to Comment 70)[3]; CES at 126 (response to Comment 164)[4]; CES at 128 (response to Comment 166)[5]; CES at 130 (response to Comment 170)[6]; CES at 417 (response to Comment 600).[7]

The inherent problem with the Dungeness rule is that Ecology's approach to OCPI has been soundly rejected by the Washington Supreme Court in *Swinomish Indian Tribal Community v. Ecology*, ___ Wn.2d ___, 311 P.3d 6 (2013). In light of *Swinomish*, the Dungeness rule must be drastically amended.

In *Swinomish*, issued after promulgation of the Dungeness rule, the Supreme Court decided that Ecology lacks authority to use OCPI to create a reservation setting aside water for future out-of-stream beneficial uses in the Skagit River Basin: "We conclude that Ecology has erroneously interpreted the statutory exception as broad authority to reallocate water for new beneficial uses when the requirements for appropriating water for these uses otherwise cannot be met. *The exception is very narrow*, however, *and requires extraordinary circumstances* before the minimum flow water right can be impaired." *Swinomish,* 311 P.3d at 8 (emphasis added).

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[1] Available at https://fortress.wa.gov/ecy/publications/publications/1211039.pdf. ORPC incorporates by reference the documents cited in this Attachment to Petition for Rule Amendment. Documents not available online are attached as exhibits hereto.

[2] "The reserves of water established in this rule rely on a finding that the public benefits achieved by the limited domestic water reserves clearly overrides the potential for negative effect on instream resources, consistent with RCW 90.54.020(3)(a)."

[3] "Ecology has duty [sic] to adopt instream flows as recommended in the 2005 Elwha-Dungeness Watershed Plan. Ecology has also made provisions for providing water for other uses. This rule establishes reserves of water to ensure water availability for future domestic uses."

[4] "Ecology has a responsibility to protect water for domestic use and reserves are needed in this watershed to ensure water for domestic use is available as mitigation projects are phased in."

[5] "Reserves coupled with maximum depletion amounts limit the maximum future impact to surface waters to 1 percent of low flow."

[6] "[R]eserves . . . are sometimes a necessary part of a water management framework."

[7] "The measures in this rule are intended to help protect stream flows by establishing instream flow levels and requiring mitigation for new withdrawals. This rule also establishes reserves of water to ensure there will be water available for domestic use, consistent with RCW 90.54.020(5) which calls for protection of water in a potable condition to satisfy human domestic needs."

The Washington Water Resources Act provides a "general declaration of fundamentals" for utilization and management of water, including the following: "Perennial rivers and streams of the state shall be retained with base flows necessary to provide for preservation of wildlife, fish, scenic, aesthetic and other environmental values, and navigational values. . . . Withdrawals of water which would conflict therewith shall be authorized only in those situations where it is clear that overriding considerations of the public interest will be served." RCW 90.54.020(3)(a).

In the broadly-worded *Swinomish* majority opinion emphasizing the protection of minimum instream flows necessary for fish, wildlife, scenic, and aesthetic values, the Court rejected Ecology's attempt to use OCPI to create set-asides that would enable future out-of-stream uses conflicting with such minimum stream flows. The Court held that OCPI is intended only as a narrow exception to be applied on a case-by-case basis, and cannot be used to justify a general set-aside within a basin regulation.

The Supreme Court held that Ecology's use of the OCPI exception in the Skagit Basin rule was *ultra vires*, explaining that "a minimum flow set by rule is an existing water right that may not be impaired by subsequent withdrawal or diversion of water from a river or stream. The exception in RCW 90.54.020(3)(a) is a *narrow* exception, not a device for wide-ranging reweighing or reallocation of water through water reservations for numerous future beneficial uses." *Swinomish*, 311 P.3d at 13 (emphasis in original).

The Court relied on its previous discussion of minimum flows in *Postema v. Pollution Control Hr'gs Bd.*, 142 Wn.2d 68, 11 P.3d 726 (2000), including the explanation that "once established, a minimum flow constitutes an appropriation with a priority date as of the effective date of the rule establishing the minimum flow. . . . Thus, a minimum flow set by rule is an existing right which may not be impaired by subsequent groundwater withdrawals." *Swinomish*, 311 P.3d at 12 (citing *Postema*, 142 Wn.2d at 81). The Court stated that "Ecology's interpretation of RCW 90.54.020(3)(a) does not follow our discussion of the overriding-considerations exception in *Postema*," and held that Ecology's application of the OCPI exception in the amended Skagit Basin rule was inconsistent with the entire statutory scheme because it "conflicts with the prior appropriation doctrine." *Swinomish*, 311 P.3d at 13-14.

The Court's interpretation of RCW 90.54.020(3)(a) – that OCPI cannot be relied upon as the basis for a general set-aside within a basin rule – applies with equal force to the Dungeness water management rule. Ecology lacks authority to rely on OCPI to establish "reservations" or "reserves" in a basin regulation setting aside water for future out-of-stream uses, as it has done in the Dungeness rule (WAC 173-518-080).

It has been suggested that *Swinomish* can be distinguished based upon the timing of the OCPI reservations vis-à-vis the minimum flows in the amended Skagit Basin rule. That suggestion is incorrect. The Court's holding in *Swinomish* rests on its view of OCPI as a "narrow exception" that simply cannot be used to justify basin-wide reservations. It is irrelevant

whether Ecology attempts to establish a basin-wide OCPI reservation after or concurrently with establishment of a minimum flow. The *ultra vires* act is Ecology's reliance on OCPI for anything other than a "narrow exception" applied on a case-by-case basis.

In *Swinomish*, the Court explained that reservations "constitute appropriations of water," citing RCW 90.03.345. "Reservations of water must therefore meet the same requirements as any appropriation of water under the water code. '[B]efore a permit to appropriate may be issued, Ecology must affirmatively find (1) that water is available, (2) for a beneficial use, and that (3) an appropriation will not impair existing rights, or (4) be detrimental to the public welfare.' " *Id.* at 14 (citing *Postema*, 142 Wn.2d at 79, and RCW 90.03.290(3)). At least two of the requirements to appropriate water could not be met under RCW 90.03.290(3): "The proposed beneficial uses are for noninterruptible year-round uses, but water is not available for the proposed noninterruptible out-of-stream uses for which the water reservations are made. In addition, year-round withdrawals of water will impair the existing minimum flow rights, another reason why an application to appropriate would have to be denied under RCW 90.03.290(3)." *Id.* at 14.

In the Dungeness rule, Ecology has paired highly restrictive minimum flows and stream closures with OCPI-based reservations of water for specified uses, in order to create a relief valve from the otherwise draconian effect of the minimum flows and closures. *See* WAC 173-518-080(1). Without the relief provided by the reservations, the attempted compromise embedded in the Dungeness rule is a failure. Accordingly, Ecology must amend the Dungeness rule.

Ecology must develop an amended rule establishing reservations of adequate supplies of potable water for rural uses and development – *not through application of the OCPI exception,* but through Ecology's authority under RCW 90.54.050, which provides in pertinent part as follows:

> In conjunction with the programs provided for in RCW 90.54.040(1), *whenever it appears necessary to the director* in carrying out the policy of this chapter, the department may by rule adopted pursuant to chapter 34.05 RCW:
>
> (1) Reserve and set aside waters for beneficial utilization in the future, . . .

RCW 90.54.050 (emphasis added).

Utilizing its authority under RCW 90.54.050(1), Ecology must reserve and set aside quantities of groundwater to meet the water demand associated with buildout consistent with Clallam County's adopted land use plans and designations, as directed by RCW 90.54.020(5) ("Adequate and safe supplies of water shall be preserved and protected in potable condition to satisfy human domestic needs") and RCW 90.54.020(10) ("Expressions of the public interest will be sought at all stages of water planning and allocation discussions"). This will require

close coordination with the County; participation by all affected stakeholders, including representatives of rural property owners; and a credible, science-based assessment of the net impacts on streamflows of anticipated rural groundwater withdrawals.

If Ecology determines it is necessary to address impacts on streamflows from withdrawal of groundwater reserved under RCW 90.54.050, it should do so in a way that does not impose complex and costly regulatory impacts on property owners and local government. A basin-focused water acquisition and mitigation program, relying on Ecology's trust water right authority and matching up with the County's long-range planning goals and land use designations, would be an appropriate way to balance the various competing "fundamentals" in RCW 90.54.020. By contrast, the approach used by Ecology in the Dungeness rule – regulation of small groundwater uses with no measurable impact on streamflows – imposes significant costs without corresponding environmental benefits.

We urge Ecology to recognize the *Swinomish* decision as a wake-up call for Ecology's approach to instream flow rulemaking in general, and in the Dungeness basin in particular. Ecology's recent approach has caused widespread uncertainty, created direct conflicts with local land use planning authority, and imposed significant regulatory and transactional costs that are completely out of proportion to any identified benefits. Ideally, the *Swinomish* decision will prompt a reassessment of Ecology's rulemaking authority, and result in legislative clarification of the appropriate balance between protection of adequate supplies of water for domestic use and protection of base flows necessary for fish and other instream values.

In the meantime, however, Ecology must act promptly to remedy the problems it has created in the Dungeness rule. We recognize that Ecology's resources for rulemaking are very limited at this time, and that Ecology's limited staff is engaged in new rulemaking work in other watersheds. However, that other work should be suspended in light of the *Swinomish* decision. Fixing the Dungeness rule – and mitigating the damage caused by it – should be the agency's highest priority for rulemaking.

II. The Dungeness rule is fatally flawed because it rests on minimum stream flows and closures that are not consistent with RCW 90.03.345 and 90.03.290.

A. *Swinomish* requires minimum instream flows to meet the four-part test.

The Court's decision in *Swinomish* undermines not only Ecology's use of OCPI to create water reservations, but the minimum instream flows and closures established in the Dungeness rule. The Court held in *Swinomish* that reservations are "appropriations of water" under RCW 90.03.345, and "must therefore meet the same requirements as any appropriation of water under the water code" – i.e., the four-part test (beneficial use; water availability; no impairment of existing rights; no detriment to the public welfare) established under RCW 90.03.290.

The Court's reasoning in *Swinomish* does not apply solely to reservations; the cited statute explicitly applies to minimum flows as well: "The establishment of reservations of water for agriculture, hydroelectric energy, municipal, industrial, and other beneficial uses . . . *or minimum flows* or levels . . . shall constitute appropriations within the meaning of this chapter with priority dates as of the effective dates of their establishment." RCW 90.03.345 (emphasis added).

Under the Court's interpretation of RCW 90.03.345, minimum instream flows set by rule must also satisfy the four-part test. This includes not just availability of water, but the requirement that the appropriation embodied in a minimum flow not be detrimental to the public interest. *See* RCW 90.03.290.

B. The Dungeness rule minimum flows do not meet the "water availability" prong of the four-part test.

In the Dungeness rule, Ecology has established minimum flows at levels that are simply not present in the river at various times, and which by definition cannot satisfy the four-part test. WAC 173-518-040 provides in pertinent part:

> The instream flows established in this section are based on recommendations in the 2005 Elwha-Dungeness watershed plan, consultation with the Jamestown S'Klallam Tribe, the departments of fish and wildlife, agriculture, and commerce; and public input received during the rule-making process.
>
> Instream flows established in this rule are necessary to meet the water resource management objectives of the Elwha-Dungeness watershed plan.

WAC 173-518-040(1), (2).[8] Nothing in the Dungeness rule reflects any finding by Ecology that the instream flows satisfy the four-part test in RCW 90.03.290.

The record underlying development of the Dungeness rule demonstrates that the instream flows in the rule cannot satisfy the water availability prong of the four-part test.[9] Ecology has

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[8] Although Ecology relies on the Elwha-Dungeness Watershed Plan, reliance on a watershed plan does not excuse compliance with applicable law. Nothing in the watershed planning statute, RCW chapter 90.82, allows either a planning unit or Ecology to ignore applicable instream flow laws. *See* RCW 90.82.080; 90.82.085.

[9] *E.g.*, CES at 17 ("Establishment of an instream flow does not require that water always be present at that flow level; it is merely a limitation on when new junior water rights may be exercised"); CES at 17-18 ("Although instream flows are not set with the expectation those flows will necessarily be in the river, . . ."); CES at 56 (response to Comment 53) ("Setting instream flow levels does not mean that those levels will always be met in the stream. Natural variations in rainfall and the use of existing water rights can result in actual flows being lower than the instream flows"); CES at 61 (response to Comment 59) ("A minimum instream flow under state law is not a hydrologically-defined base flow"); CES at 62 (response to Comment 60) ("Note that in recent years, the river was above 180 cfs for *most of* the dry months . . . This data supports that 180 cfs is *within the normal range* of the river") (emphasis added).

consistently asserted that the Dungeness basin is over-appropriated, relying on the 1924 adjudication awarding more than 500 cfs to the irrigators. *See, e.g., A Guide to Water and How We Use It in the Dungeness Watershed*, Ecology Publication No. 10-11-018 (June 2010).[10] Ecology has also consistently maintained that the Dungeness rule will not impair existing rights. *See* WAC 173-518-010(3). Quantification of existing appropriative rights is therefore critical to determining water availability for minimum instream flows.

In the Jamestown S'Klallam Tribe's Clean Water Act 319 Plan, *Protecting and Restoring the Waters of the Dungeness* (July 2007),[11] the Tribe noted that the Dungeness River was over-appropriated and provided the following table:

Table 5-3: Water Rights and Claims on the Dungeness River in cfs
(preliminary, based on Trust Water Rights MOU - table adapted from Entrix, 2005)

Dungeness River Agricultural Water Users	156.00
Other as decreed in 1924 adjudication (treated as relinquished in TWR MOU)	8.84
WDFW Fish Propagation (non-consumptive)	40.00
City of Sequim	1.40
Others	0.01
Water Claims	1.90
Total	**208.15**

Jamestown S'Klallam Tribe 319 Plan, p. 79.

Given that the irrigators' rights were reduced to 93.5 cfs in September 2012, this reduces the overall total of water rights and claims to **145.65 cfs.** It should be noted that this amount does not include the approximately 30 cfs already allocated for instream flows by virtue of the State grant funding used in the restoration projects described in *A Review of the Implementation of the 1998 MOU Between the Department of Ecology and the Dungeness Water Users Association* (Ecosystem Economics, May 2011) (Exhibit 1 attached hereto) at 20. When those instream flow allocations are combined with existing appropriative rights, those allocations total approximately **175 cfs.**

According to Ecology fisheries biologist Brad Caldwell, the river's median flows in August and September are 270 cfs and 180 cfs, respectively. B. Caldwell, *Response to Questions from Karen Terwilliger for Senator Hargrove* (Exhibit 2 attached hereto). If Ecology adopted instream flows meeting the water availability prong of the four-part test, fewer than 5 cfs

[10] Available at https://fortress.wa.gov/ecy/publications/publications/1011018.pdf.

[11] Available at www.jamestowntribe.org/programs/nrs/319cplan.pdf.

would be available in September – *based upon median flows.*[12] Ecology has stated that the "daily mean flows in the late summer fall as low as 80 cfs," and that 171 cfs is the mean monthly flow during the month of September. CES at 2.

Ecology has consistently relied on Dungeness ISF numbers recommended in a 1993 U.S. Fish and Wildlife Service paper, *Recommended Instream Flows for the Lower Dungeness River* (Hiss 1993),[13] despite the fact that these numbers failed to consider the river's hydrology. The 1993 recommendations were derived from a 1991 USFWS IFIM study, *Fish Habitat Analysis for the Dungeness River Using the Instream Flow Incremental Methodology* (Wampler and Hiss 1991).[14] The 1991 IFIM study was based on field work conducted in 1988 and 1989. Hiss 1993 at 2; Wampler and Hiss 1991 at 1. The Abstract of the 1993 paper states:

> At times, these flows may exceed the total natural flow in the river, for the flows are not based on hydrological statistics. Rather, they are based on providing full fish habitat protection by achieving the depths and velocities desired by fish given the channel shape at the time of measurement. These flows provide, for the first time, a benchmark against which lower flows can be evaluated in terms of percent fish habitat gained or lost for key species and life stages, when instream flow is increased or decreased by changes in diversion.

Hiss 1993 at i. In the section of the 1993 paper entitled "Cautions in Interpretation: Recommended Flows and Water Availability" the author emphasizes: "Historic low flow was not considered in our method; rather, our recommendations are based solely on fish habitat requirements. Therefore, the proposed flows provide a biological benchmark against which any flow can be evaluated in terms of percent fish habitat gained or lost." *Id.* at 6.

The Dungeness River Agricultural Water Users Association draft Comprehensive Irrigation District Management Plan (HDR, December 18, 2006)[15] ("CIDMP") notes that the WUA diversion goals for the critical period of late summer through early fall will keep the median flow at the upper IFIM site above or near 100 cfs. CIDMP at 6-5. Importantly, 100 cfs "represents 75 percent of the optimum weighted useable area (WUA) from the IFIM study." *Id.* The CIDMP acknowledged that 180 cfs "could not be achieved for long periods in most years even under natural conditions if there were no diversions from the Dungeness River." *Id.*

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[12] Ecology did not dispute the data in Comment 66 on the draft Dungeness rule to the effect that during the ten year period 2000-2009, only once has a flow of 180 cfs been achieved on September 1. CES at 71-72.

[13] Available at www.fws.gov/wafwo/fisheries/Publications/FP070.pdf.

[14] Available at http://www.fws.gov/wafwo/fisheries/Publications/FP186.pdf.

[15] Available at www.clallamcd.org/publications/.

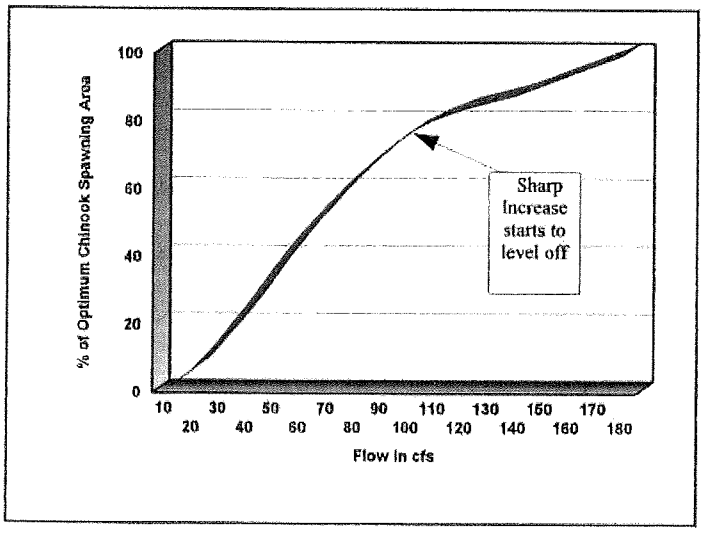
Contrary to evidence from the record that water is not available at such flow levels, the Dungeness rule establishes a minimum instream flow of 180 cfs in the Dungeness mainstem during August and September. WAC 173-518-040, Table IIA. Ecology disregarded hydrologically-defined base flows, relying instead on the "biological or ecological" approach articulated by WDFW's Hal Beecher: "In a biological or ecological context, a minimum flow can be considered the lowest flow that will provide unimpaired fish conditions; lowering flow below the minimum can be expected to reduce potential fish production." CES at 61 (response to Comment 59). This approach fails to satisfy the water availability prong of the four-part test in RCW 90.03.290.

C. The Dungeness rule minimum flows do not meet the "no detriment to the public welfare" prong of the four-part test.

In addition to failing to apply the "water availability" prong of the four-part test in RCW 90.03.290, Ecology failed to apply the "no detriment to the public welfare" prong of the four-part test to the minimum instream flows in the Dungeness rule. Ecology's inclusion in the Dungeness rule of "optimum" instream flows that do not equate to actual minimum flows has produced needless hardship for the local community and for property owners and businesses within Clallam County.

Ecology established minimum instream flows in the Dungeness rule that "enhance" rather than "protect" the natural environment.[16] *Cf.* RCW 90.54.020(3). Ecology acknowledged

[16] Chinook migration, spawning, and rearing, and pink spawning, and steelhead rearing were selected as the priority species-life stages in the 1993 USFWS recommendation (Hiss 1993). Hiss explains that Chinook spawning habitat increases rapidly at flows up to 100 cfs; yet above 100 cfs, the "incremental gains" are less, but continue until the "overall maximum habitat area" is reached at 180 cfs. Hiss 1993 at 8. *See also* Figure 6.1, *Dungeness-Quilcene Water Resource Management Plan*, Ecology Pub. No. 94-WRMP-17-18 (June 30, 1994) (available at https://fortress.wa.gov/ecy/publications/publications/94wrmp1718.pdf):



that "minimum" is defined as "the smallest quantity, number, or degree possible or permissible," that the term "base flow" in hydrology is "widely recognized as that component of streamflow sustained during extended dry periods by groundwater discharging to the stream channel," and that the choice of these particular terms in the relevant statutes "appears to indicate an intent that instream flows be set at relatively low levels that could be expected to be present a relatively high percentage of the time." CES at 72 (response to Comment 66).

Ecology nevertheless failed to apply the specific legislative language, opting instead to rely on the introductory sentence in RCW 90.54.020(3) for authority to "enhance" the quality of the natural environment. CES at 73.[17] Ecology's approach is not consistent with the legislative intent underlying RCW chapter 90.22 and RCW chapter 90.54:

> The intent was, simply stated, that streams with certain values were not to be dried up or reduced to trickles. Rather, flows, usually of an amount extending to a limited portion of a stream's natural flow, were to be retained in order to protect instream values of the stream from total extinguishment. Of import here, the thrust of the 1967 legislation was not designed to maintain a flow in excess of the smallest amount necessary to satisfy the protection and preservation values and objectives just noted. . . .
>
> The words of the "fundamental" of RCW 90.54.020(3)(a), while not identical to those of the 1967 enactment contained in RCW 90.22.010, represent an affirmation of the general minimum instream flow policy established in 1967.

Inter-office Correspondence from Charles B. Roe, Senior Assistant Attorney General, to Eugene F. Wallace, Program Manager for Water Resources, Department of Ecology (February 20, 1986) (attached hereto as Exhibit 3) at 8-9. Mr. Roe explained: "Stated simply, the basic policy . . . is to keep all streams currently 'alive' in that condition. It is not, however, a policy designed to retain flows that are greater than necessary to ensure the continued existence of the instream values associated with the stream on a minimum basis."

Ecology has cited *Dep't of Ecology v. Public Utility Dist. No. 1 of Jefferson County*, 121 Wn2d 179, 849 P.2d 646 (1993) ("*Elkhorn*") for the proposition that the Washington Supreme Court has affirmed "the method employed by Ecology . . . to establish instream flows." CES at 73 (response to Comment 66). In the context of the Dungeness rule, it is inaccurate to suggest

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The *Elwha-Dungeness Watershed Plan* (available at www.clallam.net/environment/elwhadungenesswria.html) identified USFWS policy on instream flows as adopting flows consistent with 80% of the mean monthly flow as one way to establish streamflows sufficient to "protect salmon listed under the ESA." *Watershed Plan*, Appendix 1-A at 5. The Watershed Plan further notes that flow recommendations for the critical period of August through October provide 100% of the habitat area, expressed as a weighted usable area, for Chinook and pink salmon. *Id.*

[17] "Ecology and the state Department of Fish and Wildlife have found from experience that instream flows set at low levels (such as the lowest flow of record or at hydrologic base flow levels) do not adequately preserve and protect instream values such as fish, recreation, and aesthetics. Therefore, Ecology regards the minimum permissible flow consistent with legislative intent as the lowest flow capable of protecting and preserving and where possible enhancing instream values."

that *Elkhorn* allows Ecology to override legislative intent in setting minimum instream flows by rule. In *Elkhorn*, the Court affirmed Ecology's authority under the Clean Water Act to assure compliance with state water quality standards by establishing bypass reach instream flows in a Section 401 certification for a hydroelectric project on the Dosewallips River. *Id.* *Elkhorn* reversed as "clearly erroneous" the PCHB's *factual* determination that Ecology's flows were "enhancement" flows rather than minimum "protection" flows. *Id.* at 204 ("Ecology's intent was clearly to preserve, not to enhance, the fishery in the Dosewallips"). The Court did not reach the question "whether Ecology has the authority to enhance the Dosewallips fishery by a base flow requirement in the section 401 certificate." *Id.* at 204. *Elkhorn* does not undermine Mr. Roe's explanation of the legislative intent underlying RCW chapters 90.22 and 90.54.

Having established regulatory instream flows that go far beyond minimum "protection" of the natural environment and essentially preclude new appropriations for out-of-stream uses, Ecology thereupon resorted to the OCPI exception and an unwieldy and expensive well-by-well "mitigation" apparatus to enable future domestic use in the Dungeness basin. Had Ecology evaluated minimum flows necessary to protect – rather than enhance – the natural environment, it would have arrived at true "base flows" consistent with RCW 90.54.020(3)(a) that would not have resulted in such draconian impacts on the local community.

The minimum instream flows – and the stream closures resulting from Ecology's approach to "minimum" flows – in the Dungeness rule have the effect of foreclosing rural economic development and new residential uses in the Dungeness basin. This is what compelled Ecology to utilize the OCPI exception in the first place. Ecology has already found that the minimum flows and closures are clearly overridden by the public interest in providing water for domestic water supply.[18] As such, the existing flows and closures in the Dungeness rule cannot meet the "no detriment to the public welfare" prong of the four-part test.

Ecology must amend the Dungeness rule to establish minimum flows under RCW 90.54.020(3)(a) that are consistent with RCW 90.03.345 and that meet the four-part test under RCW 90.03.290. Under the "no detriment to the public welfare" prong of the four-part test, Ecology lacks authority to set "optimal" flows aimed at achieving "maximum" fish habitat or to impose stream closures that it has already acknowledged are clearly overridden by the public interest in adequate future domestic supply.

D. The stream closures in the Dungeness rule are *ultra vires* and, to the extent predicated on Ecology's notion of minimum instream flows that cannot satisfy the four-part test, contrary to RCW 90.03.345 and 90.03.290.

The justification for closing numerous streams in the Dungeness rule is murky at best, but one thing is clear: to the extent based on protection of "minimum instream flows" for which

[18] WAC 173-518-080(1).

water is not actually available, the closures are contrary to the Supreme Court's interpretation of the Water Code in *Swinomish*. In conjunction with establishment of reasonable minimum flows and future use reservations in an amended Dungeness rule, Ecology must reevaluate each stream closure in light of its existing legal authority and the Supreme Court's decision in *Swinomish*.

In the rule, Ecology defines "closure" as follows:

> "Closure" means that water is no longer available for future appropriations without mitigation to offset the use. This is due to a finding by ecology that further appropriations from the closed stream(s) or hydraulically connected groundwaters would impair senior water rights or cause detriment to the public interest.

WAC 173-518-030. The definition of "closure" in the rule sets forth no specifics of any "findings" regarding water right impairment or detriment to the public interest supporting any of the stream closures in particular.[19] *See* WAC 173-518-030; *see also* WAC 173-518-050.

In the "closures" section of the rule, Ecology determines that, *for surface water*, "based on recommendations in the watershed plan, historical and current low stream flows, and the need

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[19] A closure by rule, based upon a finding that further appropriations would impair senior water rights or cause detriment to the public interest, is not consistent with Ecology's duties under the Water Code. RCW 90.03.290 requires Ecology to investigate each application for a water right permit, "and determine what water, if any, is available for appropriation, and find and determine to what beneficial use or uses it can be applied." RCW 90.03.290(1); *see also* RCW 90.03.290(4) ("In determining whether or not a permit shall issue upon any application, it shall be the duty of the department to investigate all facts relevant and material to the application"). The statute further provides:

> The department shall make and file as part of the record in the matter, written findings of fact concerning all things investigated, and if it shall find that there is water available for appropriation for a beneficial use, and the appropriation thereof *as proposed in the application* will not impair existing rights or be detrimental to the public welfare, it shall issue a permit stating the amount of water to which the applicant shall be entitled and the beneficial use or uses to which it may be applied . . . . But where there is no unappropriated water in the proposed source of supply, or *where the proposed use conflicts with existing rights, or threatens to prove detrimental to the public interest,* having due regard to the highest feasible development of the use of the waters belonging to the public, it shall be duty of the department to reject such application and to refuse to issue the permit asked for.

RCW 90.03.290(3) (emphasis added).

If a permit is refused because of conflict with existing rights, the statute enables an applicant to acquire those rights by purchase or condemnation, and provides that "the department may thereupon grant such permit." RCW 90.03.290(4). A blanket closure by rule, ostensibly to prevent impairment, is inconsistent with Ecology's duty to investigate and precludes permit applicants from utilizing the opportunity provided by RCW 90.03.290(4).

A blanket closure by rule, ostensibly because further appropriations would cause detriment to the public interest, is also inconsistent with the Water Code. Such a closure by rule precludes Ecology from giving "due regard to the highest feasible development of the use of the waters belonging to the public" in determining whether "the proposed use . . . threatens to prove detrimental to the public interest," as required by RCW 90.03.290(3).

In short, the Dungeness rule's definition of "closure" in WAC 173-518-030 embodies a notion of water "availability" that is in direct conflict with the agency's duties under the Water Code.

to protect existing water rights, water is not reliably available for new consumptive uses" from various streams and tributaries in the Dungeness River watershed. WAC 173-518-050. Although the structure of WAC 173-518-050 (beginning with the words "Surface water:") suggests that Ecology may have considered separate provisions for groundwater closures, it did not include specific groundwater closures in the rule. The rule simply provides that future groundwater appropriations are subject to these stream closures, and sets "maximum depletion amounts" of unmitigated impacts to closed streams. WAC 173-518-070; 173-518-085.

The only statutory authority for a closure by rule is RCW 90.54.050, which authorizes Ecology to withdraw water from further appropriation because of a lack of sufficient information and data to allow for the making of sound decisions. However, that is not the basis for the stream closures in the Dungeness rule. Rather, Ecology explains that the closures are based upon a finding that water is not available. CES at 78 (response to Comment 74).[20]

Ecology's *Concise Explanatory Statement* expands upon this justification as follows: "An 'administrative closure' is a term used to describe a finding that water is not available for new diversions from a specific surface water body based on a recommendation from the Director of Washington State Fish and Wildlife made pursuant to RCW 77.57.020." CES at 78 (response to Comment 75). However, RCW 77.57.020 does not authorize a closure by rule.

RCW 77.57.020 relates only to a case-by-case evaluation of *permit applications*.[21] Nothing in RCW 77.57.020 overrides Ecology's duty to investigate each permit application under RCW 90.03.290, or suggests that Ecology may by rule circumvent its duty to investigate each permit application.

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[20] "This rule does not withdraw water from further appropriations because of a lack of information pursuant to RCW 90.54.050. The closure of surface water bodies is based on a finding that water is not available."

[21] RCW 77.57.020 provides in its entirety as follows:

> It is the policy of this state that a flow of water sufficient to support game fish and food fish populations be maintained at all times in the streams of this state.
>
> The director of ecology shall give the director [of WDFW] notice of *each application for a permit* to divert or store water. The director has thirty days after receiving the notice to state his or her objections *to the application.* The *permit shall not be issued* until the thirty-day period has elapsed.
>
> The director of ecology *may refuse to issue a permit* if, in the opinion of the director of ecology, *issuing the permit* might result in lowering the flow of water in a stream below the flow necessary to adequately support food fish and game fish populations in the stream.
>
> The provisions of this section shall in no way affect existing water rights.

RCW 77.57.020 (emphasis added). This statute addresses water right permits; it does not apply to permit-exempt groundwater withdrawals.

Ecology also resorts to its historical practices to explain the stream closures in the Dungeness rule:

> "Closure" is a term of art historically used by the courts, Ecology, and Ecology's predecessor agency. It signifies a determination that water is not available for appropriation from a surface water or groundwater source. It has appeared in water management rules throughout the state since the 1970s.

CES at 37 (response to Comment 19). "Closure" may be a "term of art" to Ecology, but it is not derived from the Water Code. Ecology's historical practice is simply not an acceptable substitute for statutory authority. *See generally Ecology v. Theodoratus*, 135 Wn.2d 582, 957 P.2d 1241 (1998). (Notably, Ecology has relied upon the same "OCPI" approach to support water reservations in several other water management rules, but that did not stop the Supreme Court in *Swinomish* from invalidating Ecology's use of OCPI in the Skagit rule.)

Finally, Ecology also suggests that the stream closures in the Dungeness rule are predicated upon its authority to promulgate minimum instream flows by rule: "Ecology has closed (or seasonally closed) surface water bodies that chapters 90.22 and 90.54 RCW direct us to protect." CES at 110 (response to Comment 134). *Compare* WAC 173-518-040, Tables II-A and II-B, *with* WAC 173-518-050, Table III.

RCW chapters 90.22 and 90.54 authorize Ecology to establish minimum instream flows or base flows. But those statutes do not (except in circumstances involving insufficient data or information, which Ecology has already explained do not exist here) authorize closure of a stream by rule.

Thus, it appears that the stream closures in the Dungeness rule result from Ecology's notion of "biological or ecological" minimum instream flows – flows which are not now achieved in those streams.[22] Under RCW 90.03.345 and *Swinomish*, Ecology cannot establish a minimum instream flow without satisfying the four-part test for a new appropriation. Ecology has no authority to establish a minimum instream flow unless water is available and unless the minimum flow would not be detrimental to the public welfare. Nor does Ecology have authority to establish by rule a "closure" intended to protect an *ultra vires* minimum instream flow, to prohibit permit-exempt groundwater withdrawals under RCW 90.44.050 based upon impacts to such "closed" streams, or to require mitigation of such impacts.

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[22] *See, e.g.*, Technical Memorandum, Assessment of Baseflow in Small Streams of the Dungeness Watershed (Peter Schwartzman, Pacific Groundwater Group, January 14, 2008), Ecology Publication No. 12-03-281 (available at https://fortress.wa.gov/ecy/publications/publications/1203281.pdf); Memorandum from Paul J. Pickett and Brad Caldwell to Brian Walsh and Cynthia Nelson re Flows at proposed Instream Flow regulatory control stations in the Dungeness portion of WRIA 18 (February 8, 2012) (attached hereto as Exhibit 4), Table 2; CES at 54 (Comment 51).

In light of the complete absence of legal authority and lack of any particularized findings to support Ecology's determination that water is not available from the closed streams, it is no wonder that many members of the local community believe that Ecology began with the objective of precluding use of the groundwater permit exemption in RCW 90.44.050, and then worked backward from there to arrive at the stream closures in the Dungeness rule.

Ecology must amend the Dungeness rule to eliminate the stream closures in WAC 173-518-050. Ecology must also amend the rule to eliminate all restrictions on permit-exempt groundwater withdrawals – including requirements for "mitigation" credits and deductions – based on those stream closures.

III. The Dungeness rule must be amended to take into account past investments to restore streamflows, including the 30 cfs permanently held by the State for instream flows.

The 1993 USFWS paper cautioned that the instream flow recommendations assumed then-current "existing" conditions. Hiss 1993 at 5. Then-current conditions were actually from 1988-1989. *Id.* at 2; Wampler and Hiss 1991 at 1; *see also Watershed Plan,* 3.13-2. Hiss explained:

> Flows for maximum fish habitat and streambed gravel aggradation cannot be addressed separately in the long term. Human influence accelerated the natural erosion process and led to an unnaturally high rate of bedload aggradation. This condition appears linked to streambed instability. . . .
>
> If the streambed aggradation problem can be solved, then the flow required for maximum fish habitat could decrease.

Hiss 1993 at 5-6.[23] The 1993 USFW study identified some potential solutions to the aggradation problems in the Dungeness, such as increasing flows *in the short term* to fix fish passage barriers at low flow. Hiss 1993 at 6. Over the long term, fish passage issues could be resolved by ensuring that the side channels remain stable during the spawning and incubation season. *Id.*

During the 20 years since this study was released, the Dungeness basin has been the subject of a multitude of soil stabilization projects, restoration and flow enhancement projects, and acquisition projects. *See* Exhibit 5 attached hereto. Many of these projects cite as an "overall goal" restoration of the Dungeness River. These projects are in addition to out-of-basin

[23] *See also Dungeness-Quilcene Water Resource Management Plan* (1994) at 6.4 ("Recommendations released in 1993 indicate that a minimum instream flow of 180 cfs or more for the Dungeness River is advised in the late summer, primarily to accommodate chinook and pink salmon. This is based on the present degraded habitat. . . . Conditions and factors outside of instream flow could and may make it difficult to attain the levels of production that existed in earlier times. It is hoped that habitat improvements may reduce the instream flow requirements to approach favorable conditions in the river for fish production.")

projects, such as the massive Washington Harbor restoration (located just outside the WRIA 18 East boundary), most of which involve some component of salmonid habitat restoration and/or conservation.

Further, there is no indication Ecology accounted for the instream flows already dedicated to the streams as a result of State grant funding. According to the review conducted by Ecosystem Economics in 2011, approximately 30 cfs were placed in trust by the State. *See* Exhibit 1 (MOU Review) at 20, Table 12.

When the Dungeness rule is amended to establish true minimum flows meeting the requirements of RCW 90.03.345 and RCW 90.03.290, Ecology must evaluate the base flow requirements for the Dungeness River and other streams as they exist today, not as they existed over 20 years ago.

IV. If Ecology sets instream flows in excess of base flows, it must conduct a maximum net benefits test.

As explained above, base flows are minimum flow levels necessary for the preservation of fish and related values. Allocation of waters for fish habitat in excess of base flows is subject to the "maximum net benefits" principle, requiring a balancing of interests. Exhibit 3 (Charlie Roe Inter-office Communication) at 3-4, 10. The establishment of minimum instream flows by regulation is the first determination required by Ecology related to the retention of waters within a stream. "The second is to determine, after conducting a 'maximum net benefits' test as described in RCW 90.54.020(2), whether an additional increment of flow should be provided above 'minimum' flows to satisfy instream beneficial uses, such as aesthetic and fisheries uses." *Id.* at 10.[24] This requires the balancing of interests in competing beneficial uses.

Here, Ecology failed to apply the maximum net benefits test to the instream flow levels established under the rule. Bill Clarke, in his July 7, 2012 formal comment on the rule on behalf of the Washington State Association of Realtors®, among many others, identified this failure. *See, e.g.*, CES Comments 620 and 698.

In its *Concise Explanatory Statement*, Ecology stated that it was not required to conduct a maximum net benefits test, citing its own Policy 2025.[25] CES at 418 (response to Comment

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[24] In a 1987 review of its instream resources and water allocation program, Ecology reached the same conclusion that, under existing law, "[t]he allocation by regulation of any flows in excess of Ecology's minimum or base flows, including instream flows above the minimum or base level, would be subject to a maximum net benefits determination." Ecology, Draft Environmental Impact Statement, Instream Resources and Water Allocation Program Review (February 1987) (available at https://fortress.wa.gov/ecy/publications/publications/87900.pdf), at 2-3.

[25] Emails from Ecology staff indicate that Policy 2025 (effective 1-31-2005) was developed in a settlement with the Center for Environmental Law and Policy (CELP) involving the Columbia River litigation. Other Ecology staff expressed concern about whether the policy "trumped" RCW 90.54.020. *See* Exhibit 6 attached hereto. To the

601). However, Ecology Policy 2025 does require the maximum net benefits test for "[d]evelopment of rules that would quantify the remaining water available for appropriation within a basin, particularly if the rule would tentatively commit a large quantity of water or a major share of the water resources of the basin, to future new appropriations."[26]

Here, the existing Dungeness rule effectively quantified the remaining water available for appropriation as zero, assuming the basin was over-appropriated based upon the 1924 adjudication. In an Ecology email to the Local Leaders Water Management Work Group, dated February 28, 2012 (Exhibit 7 attached hereto), the author suggested that the specific instream flow levels were of little consequence because Ecology had already decided to close the basin:

> Revisions to recommended flows, whether lower or higher, will not impact water management practices under the proposed water management rule during the critical low-flow, high-use times of the year. The Dungeness is fully appropriated and no newly appropriated water will be available during that time period no matter what flows are adopted in rule.

Exhibit 7.

When it amends the Dungeness rule, Ecology must act consistently with all the "fundamentals" in the Water Resources Act, including this one: "Allocation of waters among potential uses and users shall be based generally on the securing of the maximum net benefits for the people of the state." RCW 90.54.020(2).

Other provisions in the Act's "general declaration of fundamentals" must also be applied when Ecology assesses maximum net benefits, including RCW 90.54.020(10) ("Expressions of the public interest will be sought at all stages of water planning and allocation discussions") and RCW 90.54.020(5) ("Adequate and safe supplies of water shall be preserved and protected in potable condition to satisfy human domestic needs"). Ecology should take note that in *Swinomish*, 311 P.3d at 14, the Supreme Court rejected Ecology's use of a balancing test *for OCPI* because "[u]nder the balancing test, the need for potable water for rural homes is virtually assured of prevailing over environmental values." However, in the context of the maximum net benefits requirement, such a balancing test is required and cannot be avoided.

Conclusion

ORPC urges Ecology to begin the process of amending the Dungeness Rule by engaging all stakeholders, including representatives of rural property owners and businesses. We support amendment of the rule to create a balanced and effective water management program for the

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extent that it suggests the maximum net benefits analysis is not required in connection with "enhancement" instream flows, Policy 2025 is inconsistent with the statute. *See* Exhibit 3 (Charlie Roe inter-office communication).

[26] POL-2025 (available at www.ecy.wa.gov/programs/wr/rules/images/pdf/pol2025.pdf) at 2.

Dungeness basin that will facilitate development consistent with Clallam County's long-range planning for this area without imposing unreasonable costs on residents and property owners. We urge Ecology to act consistently with the Supreme Court's decision in *Swinomish* by ensuring careful and conscientious application of the Water Code's four-part test to any proposed appropriations for minimum instream flows.

Ecology has already acknowledged the need for potable water for rural homes in the Dungeness basin. Now, after the Supreme Court's decision in *Swinomish*, it is time for Ecology to take a fresh look at how to meet that need. ORPC would welcome the opportunity to work with Ecology on necessary amendments to WAC chapter 173-518.

4852-9128-8855, v. 2

A Review of the Implementation of the 1998 MOU between the Department of Ecology and the Dungeness Water Users Association*

Final Draft: May 2011

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1. Introduction

The Dungeness River drains northward off the Olympic Mountains into the Strait of Juan de Fuca. Only 28 miles in length, the river historically sustained diverse populations of salmonids and resident fish. Despite the proximity to the wettest portion of the continental United States, the Dungeness watershed is relatively dry, situated as it is in the rain shadow of the mountains. As a result the development of agriculture in the lower reaches of the watershed in the early 1900s relied heavily on the river for irrigation. More recently, given its pleasant, drier climate and abundant natural beauty, the area has become a favorite spot for amenity migrants and retirees. Clallam County, in which the river is situated and the town of Sequim to which the river is adjacent, has experienced rapid population growth in the last 20-30 years.

The combination of salmonids, irrigated agriculture and rapid urban and rural residential development present a classic case of resource allocation with respect to water. Irrigators, arriving first, maintain senior rights to water supply. Urban and residential development relies on groundwater supplies. Groundwater withdrawals under water right permits or certificates are regulated; however, those using permit exempt wells are effectively unregulated in terms of the extent of their use. Under Washington water law, the river and its species have no explicit claim on waters of the river. Due in large part to surface water withdrawals, and the impact of groundwater development on surface water flows, Chinook, Summer Chum, Bull Trout, and Steelhead are listed as threatened on the endangered species list and two other species of salmon, Coho and Chum, are considered depressed. The Dungeness and Elwha Chinook stocks are one of the five Puget Sound ESU stocks, which must be recovered to meet the recovery goals of NOAA Fisheries. The Dungeness River is also the river of most interest to the Jamestown S'Klallam Tribe, which resides nearby. The Tribe has neither explicitly asserted their rights to stream flows nor requested an adjudication. However, tribal fishing rights in Puget Sound are considered to have priority dates of 'time immemorial'.

The State of Washington and the local community have invested heavily in collaborative watershed planning in order to arrive at means to address these issues. In the late 1990s, the US Geological Survey (USGS) conducted a hydrogeologic assessment of the eastern portion of WRIA 18 which includes the Dungeness River and a number of adjacent streams in the eastern part of Clallam County. The Elwha-Dungeness Watershed Plan process also began at that time (Elwha being the basin forming the western portion of WRIA 18 and Clallam County). In 1998, the Sequim Dungeness Water Users Association (WUA), the local irrigation entities, entered into a Memorandum of Understanding (MOU) with the Department of Ecology to manage flows for irrigation and instream flows.

This report attempts to review progress under the 1998 MOU by compiling data (some of which was collected as part of the implementation of the MOU) and conducting analysis of performance during the 2000-2009 period. The watershed is fortunate in having a lengthy record of flow measurements taken by the USGS upriver of all five WUA irrigation diversions. In the early 2000s, Ecology established a second real-time gauge at the mouth of the River, as well as installing real-time flow gages on all five outtakes. This information was critical in assembling this report.

This report builds on prior work funded by the Department of Ecology examining the feasibility of establishing a Water Exchange mechanism in the basin. More directly it draws on work undertaken by the Washington Water Trust and Ecosystem Economics for Clallam County under a grant agreement for phase two of the Dungeness Water Exchange Phase project with the Department of Ecology. The intent of the work is to support the Dungeness Water Users Association and the Washington Department of Ecology in their discussions regarding the future of the MOU and any superseding certificates that might

emerge from these discussions (under Task 2c of the Clallam County contract). The document also serves as a partial work product under Task 2(a) and Task 2(b) for the Washington Water Trust's contract with Clallam County as it provides a status report on irrigation water rights in the Dungeness River and a report on water conservation projects and conserved water applications implemented by the WUA.

This report organizes these tasks into a number of sections. First, a description of the data gathered for the analysis is provided. Then the basics of the WUA are presented including the water rights and system operation. This includes an analysis of changes in water diverted over the last decade. The Trust Water MOU is then summarized after which progress in dedicating conserved water to trust is covered in considerable detail. Efforts to comply with terms of the MOU with respect to diversions and stream flow are then reviewed. A penultimate section puts forward the basic statistics on acreage and diversions needed for WUA members to move to a superseding certificate. Finally, a concluding section provides an overview of how this MOU fits with the last decade of activities and actions.

Summary sheets for each diversion and water right certificate are provided in Appendix A. Detailed data packs providing data and analysis on irrigated lands and diversions have been provided to each of the 7 districts and companies on an ongoing basis during discussion regarding this project.

2. Data

The Sequim-Dungeness Water Users Association (WUA) consists of seven irrigation districts and companies diverting water from the Dungeness River. The data acquired to support the analysis and information needs includes five categories of information:

1. Water Rights
   - 9 original certificates for the current 7 districts/companies
   - 1998 MOU between Ecology and WUA, including the initial calculation of conserved water
   - Water rights leased instream through the Trust Water Rights Program (2001-3, 2005, 2009)
   - Conserved water instream through the Trust Water Rights Program, including that under the MOU and that established through the State's Irrigation Efficiency Grant Program (1999 and on)

2. Stream flow records for the USGS Gage near Sequim (1923-2009)

3. WUA Irrigation Diversions
   - Ecology gage data for five diversions from the river (2000-2009)
   - WUA outtake records for five diversions and splits to each certificate (2000-2009)
   - CCD irrigators gage data (2008-2009)
   - Additional diversion data from the 1999 USGS report, the MOU and the Agricultural Water Conservation Plan, or Montgomery Report (pre-2000)

4. WUA Irrigated Lands
   - WUA reports to Ecology (1999-2002, 2008)
   - 1999 USGS report (1996-1997)

5. Conservation District figures on water conservation projects undertaken (2000-2009)

In the case of Ecology gage data, the data were last downloaded, cleaned and verified as of March 2010. In the data cleaning phase, an occasional inference was required regarding data with typographical errors. The time periods indicated above suggest the earliest and latest ranges for the data obtained. There were

gaps in the records, particularly with regard to Ecology gage and WUA irrigated acreage data. However, no data was added or interpolated in the data entry and cleaning phase.

3. Water Rights, Irrigation Entities and the WUA

The use of water for irrigation in the Dungeness dates back to the late 1800s. As shown in Table 1, a court adjudication in 1924 set the water rights for the original major Dungeness River water users. A total of 25,908 acres of irrigation was envisioned under these rights, with a cumulative draw on the Dungeness River of over 500 cfs. Two districts also hold additional water rights from other creeks. For example, Agnew Irrigation District holds a 5 cfs water right from McDonald Creek. However, the Watershed Plan notes that some of the flow in McDonald Creek diverted by the District is return flow from the Dungeness main stem diversion and asserts that irrigation from McDonald Creek is limited to this diversion and water right (Elwha-Dungeness Planning Unit 2005). According to Agnew District and Ecology, the water right appears to be a primary right to irrigate an additional 250 acres; however, there remains some uncertainty. The status of the Dungeness District's 10 cfs water right from Hurd Creek appears to be supplemental but has yet to be verified.

Table 1. Original Irrigation District & Company Rights on the Dungeness River

Name	Certificate #	Priority Date	Source	Qi (cfs)	Irrigated Acres
Agnew Irrigation District	237	10/1/1918	Dungeness River	146	7,300
Agnew Irrigation District	1804	6/3/25	MacDonald Creek[1]	5	
Clallam Ditch Company	224	1/1/1902	Dungeness River	60	3,000
Cline Irrigation District	238	7/1/1919	Dungeness River	46	2,300
Dungeness Irrigation Company	234	6/1/1911	Dungeness River	70.94	3,547
Dungeness Irrigation District	239	3/1/1921	Dungeness River	42	2,100
Dungeness Irrigation District	1666	1/21/1932	Hurd Creek[2]	10	
Eureka Irrigation & Milling Company	221	1/1/1897	Dungeness River	23.08	1,154
Highland Irrigation District	235	1/1/1915	Dungeness River	70.14	3,507
Independent Irrigation Company	232	1/1/1906	Dungeness River	40	2,000
Sequim Prairie Ditch Company	220	11/1/1895	Dungeness River	20	1,000
Grand Totals				533.16	25,908

Notes: [1]MacDonald Creek is now called McDonald Creek; the McDonald right is for the irrigation of 250 acres within Agnew Irrigation District from McDonald Creek subject to a diversion of no more than 5 cfs. [2]The Hurd Creek right is for the irrigation of 500 acres within the Dungeness Irrigation District from Hurd Creek subject to a diversion of no more than 10 cfs.

Operations under the Eureka Irrigation & Milling Company, Independent Irrigation Company, and the Sequim Prairie Ditch Company were amalgamated in the 1990s under what is now called the Sequim Prairie Tri Irrigation Association (Sequim Prairie Tri). Note however, that the signatories to the 1998 MOU included board members representing users of all nine water right certificates. Also, the Dungeness Irrigation Company recently changed its name to Dungeness Irrigation Group. Otherwise, the operational entities remain as listed on the original water right certificates.

An important milestone in water use and rights in the Dungeness River was the grouping of the different districts/companies under a single association in the late 1980s/early 1990s. The Association has the full

name of the Sequim-Dungeness Valley Agricultural Water Users Association, although it is often abbreviated to the Dungeness Water Users Association. It is referred to here as the "WUA".

Under the WUA, the members agreed to abide by a number of important of rules and regulations:

- irrigation water is prohibited outside the April 15 to September 15th period each year
- deliveries are limited to 0.02 cfs (8.98 gpm) maximum rate per acre
- the volume is determined by the crop water need and the efficiency of water use
- a maximum of 1 acre of combined lawn, landscaping and garden is allowed for personal residential use
- flood irrigation is prohibited
- members do not abide by their respective priority dates but rather agree to share any cutbacks due to supply limitations on an a pro rata basis amongst the members
- a drought response plan provides a priority of use list for water uses that would be cut back in a drought

The provision of sharing any cutbacks proportionately amongst the members is a critical arrangement arrived at under the MOU. The method of pro rata sharing is, however, not explicit. It could be carried out pro-rata based on total water rights, but could also be based on existing demand – given that members will have invested to various degrees in water use efficiencies on their systems.

4. Irrigation Operations

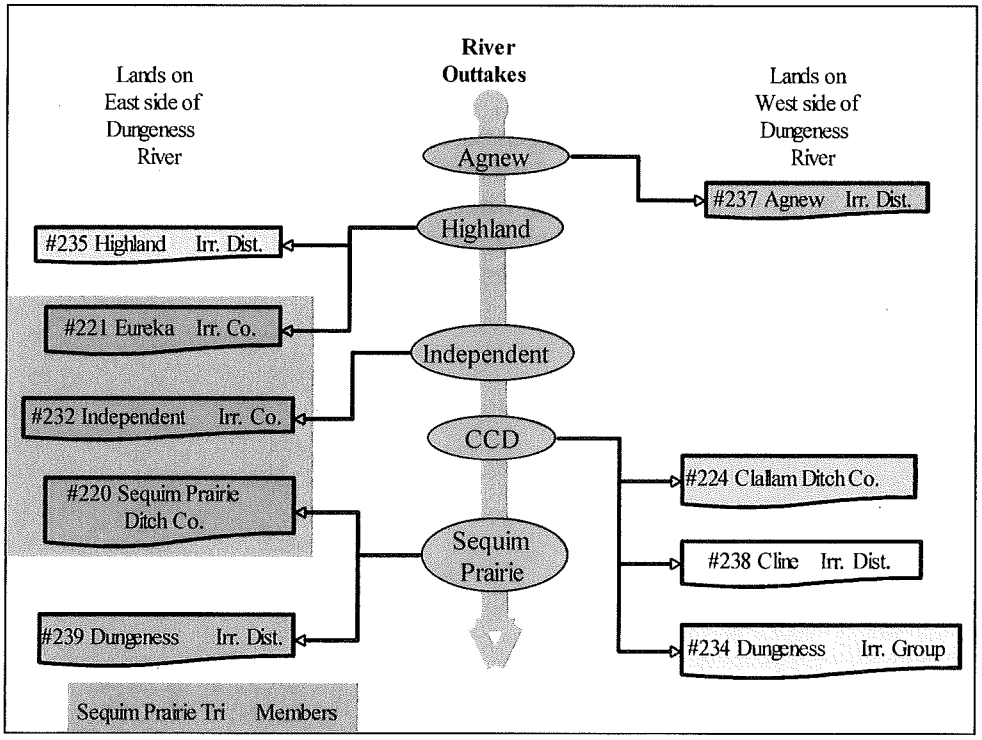
4.1 Irrigation System and Points of Diversion

There are five major points of diversion on the main stem Dungeness, all upstream of the Highway 101 bridge and downstream of the USGS gage at river mile 11.1. Two diversions are located on the west bank of the river, Agnew and CCD (Clallam-Cline-Dungeness), while three are located on the east side: Highland, Independent and Sequim Prairie. The diversions, their location and the districts and companies now served are listed Table 2. The relationship between certificates, irrigation entities and east- and west-side diversions is depicted graphically in Figure 1.

Table 2. Major Diversions on the Dungeness River

Diversions	Location (by River Mile)	Certificate Served
Agnew	11.1	Agnew Irrigation District
Highland	10.7	Highland Irrigation District Eureka Irrigation & Milling Company
Independent	8.9	Independent Irrigation Company (also distributed to Eureka and Sequim Prairie)
Clallam-Cline-Dungeness (CCD)	7.2	Clallam Ditch Company Cline Irrigation District Dungeness Irrigation Group (originally Dungeness Irrigation Company)
Sequim Prairie	6.9	Sequim Prairie Ditch Company Dungeness Irrigation District

Figure 1. Diversions, Certificates and Irrigation Entities



4.2 Irrigated Land

For the late 1970s and 80s, the MOU cites an average of 6,500 irrigated acres with a maximum of 7,000. Estimates of acres irrigated in the 1990s come from a number of sources in the early years and suggest total irrigated acreage of 5,000 to 6,000 with anywhere from 500 to 1000 acres of non-agricultural, lawn-covered area (see Table 3). A provision in the MOU calls for annual reports by the WUA of irrigated

acres. A compilation and review of reports available from WUA and received by Ecology show reports were turned in regularly for the 1999-2002 period. During this period, little variability in the numbers was observed. Since that time, only one set of finalized figures for 2008 was obtained. The 2008 figures are higher than the prior numbers but within the historical range. The increase in acreage in Clallam Ditch Company for 2008 requires further verification given that it reflects a more than doubling of irrigated acreage. The absence of reliable diversion records on the CCD diversion for 2008 precludes any assessment of whether the water diverted in that year confirms or not this change in acreage. It is also important to highlight that these WUA reports do not break out irrigated acres for the three certificates served by Sequim Prairie Tri. Depending on how these certificates are treated in any further discussions of superseding certificates, it may be necessary to allocate these acres to the Sequim Prairie Ditch, Independent and Eureka certificates.

Table 3. WUA Irrigated Acres, Historical Data

Source	Year	WUA Totals	Agnew ID	Highland ID	Clallam Ditch Co.	Cline ID	Dung. Group	Sequim Prairie Tri	Dung. ID
MOU	1978-80&1987-89	average of 6,500 acres with maximum of 7,000							
USGS	1996-1997	5,130	1,190	620	410	460	710	1,330	410
WUA[1]	1996	5,927	1,538	980	453	475	704	1,342	435
WUA	1999	5,739	1,518	995	347	438	754	1,232	455
WUA	2000	5,766	1,556	995	392	438	662	1,268	455
WUA	2001	5,794	1,561	995	392	438	662	1,268	478
WUA	2002	5,871	1,561	995	392	438	691	1,316	478
WUA	2008	6,286	1,566	1,167	510	438	665	1,330	610
WUA	2009	[2]	1,566	1,167	585	448	610	1,330	[2]
WUA	2010	[2]	1,566	1,167	585	518	610	1,332	[2]

Notes: [1]From Montgomery Water Group (1999) GIS analysis based on WUA Data. A study by Eckert that occurred contemporaneously with the WUA/Montgomery effort found a lower total of 5,597 acres irrigated of which 955 were estimated to be in built or lawn-covered areas. [2]Dungeness ID numbers for 2009 and 2010 are not available so WUA totals are also not available.

4.3 Instream Leases

In 2001, 2003, 2004 and 2005, Ecology leased water in the late season from August 1 to September 15 (a so called "split season" lease) from various irrigation districts and companies in the Dungeness. In 2009, the Washington Water Trust (WWT) entered into forbearance agreements with nine water users in the WUA. Under the forbearance agreements, irrigators ended diversions for irrigation of specific acres as of August 15th. Any analysis of diversion records needs to accommodate these voluntary reductions in water use; thus, these are quantified below in Table 4.

Records obtained from Ecology for 2001 show 970 acres were leased for an instantaneous flow of 7.09 cfs. A sum of approximately $155,000 was paid for this water. In 2003-2005, Ecology leased between 10 and 11 cfs each year in the Dungeness and paid irrigators $175/acre for a total of $238,000 to $260,000 per year. The forbearance agreements in 2009 reflected a total of 2.23 cfs of reductions at the various points of diversion. WWT paid $23,000 to irrigators for these agreements. The cost per unit for these leases varied from $10,000/cfs for the WWT leases to $21,000 to $23,000/cfs for the Ecology leases. The difference in cost arises mainly because the WWT leases were for 30 days instead of the 45 days under the Ecology leases. Another contributing factor was that Ecology offered a fixed price to

irrigators while WWT's leasing effort was based on a request for proposal in which water users were paid according to the bid they submitted, subject to a maximum price.

Table 4. Instream Leasing on Dungeness River by Diversion and Irrigation District

(all figures cfs)	Year Instream				
Certificates	2001	2003	2004	2005	2009
Agnew ID	1.63	4.20	4.12	3.80	0.45
Clallam Ditch Co.	0.20	0.72	0.85	0.85	0.08
Cline ID	1.35	1.16	1.16	1.16	0.58
Dungeness Group	0.70	1.03	1.41	1.40	0.31
Dungeness ID	0.90	0.93	1.38	1.47	0.45
Highland ID	1.20	1.06	1.06	1.10	-
Sequim Prairie Tri	1.11	0.95	0.95	1.19	0.36
Grand Total	7.09	10.05	10.93	10.97	2.23

4.4 Conservation Projects

Available project-level data on water conservation projects was obtained from the Clallam Conservation District for projects completed in 2000 and subsequent years. Data on a number of projects, including several implemented by Agnew Irrigation District, are not included because the Conservation District did not play a role in the planning or implementation of those projects. Table 5 utilizes the data gathered from the Conservation District to provide a breakdown of conservation efforts by entity, and the associated implementation costs in the form of grants awarded by state and federal agencies and the expected water savings (see Appendix B for individual project data). In total, these projects account for 33 miles worth of ditch and canals, and a water savings of 15.55 cfs, or approximately 4,700 AF of water. At a total funding amount of $7.7 million, this water was saved at an average cost of approximately $500,000/cfs or $1,600/AF. These costs exclude preparation costs such as planning, design, cultural resources surveys, project management, and administration.

Table 5. Project Inputs, Costs and Saved Water by District and Company

	No. of	Pipe Length	Cost	Total Water Saved	
District/Company	Projects	(ft)	($)	(cfs)	(AF)
Cline ID	5.33	58,010	$ 2,908,260	3.36	1,024.53
Clallam Ditch Co.	4.33	39,518	$ 1,499,113	2.98	908.66
Dungeness Group	5.33	37,453	$ 1,159,763	2.47	753.15
Sequim Prairie Tri	4.50	27,120	$ 1,063,309	4.56	1,390.44
Dungeness ID	3.50	7,820	$ 1,006,088	1.94	590.02
Highland ID	1.00	3,000	$ 44,417	0.03	9.15
Agnew ID	1.00	5,000	$ 14,969	0.21	64.03
Totals	25.00	177,921	$ 7,695,918	15.55	4,739.98

Notes: The cost, input and water figures for the major main line piping project in Cline ID, Clallam Co., and Dungeness Irrigation Group were apportioned equally across the respective irrigation entities to arrive at total figures for each district and company. Figures for water saved are Conservation District estimates and do not equal amounts applied for under the Trust Water Rights Program, because only a portion of the anticipated water savings were applied to the Trust.

Cline Irrigation District, Clallam Ditch Company, and Dungeness Irrigation Group have collectively spent over $5.5 million on conservation. In particular, this includes the Combo project, which involved combining the Clallam and Cline main canals into a single pipeline, including the portion of canal shared with the Dungeness Irrigation Group, and piping all of the Clallam and Cline laterals, except one short

lateral at the end of the Cline system. The Combo project is responsible for saving 7.1 cfs or 46% of the total water saved by the 25 projects implemented through the Conservation District.

Four of the projects were undertaken by Sequim Prairie Tri Irrigation. Including the split project with Dungeness Irrigation District, Sequim Prairie Tri saved the most water among the entities and spent the fourth-most amount of grant money. Not included in the data reported here is a Salmon Recovery Funding Board (SRFB) grant that the Sequim Prairie Tri administered themselves for the Port Williams reservoir. That grant accounted for over 50% of the cost of the Project (approximately $533,000).

Three of the projects are directly attributable to Dungeness Irrigation District. Highland and Agnew Irrigation Districts each had a single project facilitated by the Conservation District and received the least amount of Conservation District-administered grant money for projects. This does not mean that these districts have not invested in conservation efforts; rather, they have not done projects that required formal transfers of saved water to Trust as part of grant requirements. Agnew has administered their own SRFB grant for over $0.5 million and both entities have received SRFB funding through the Jamestown S'Klallam Tribe. It also reflects the fact that the largest, most obvious system inefficiencies were tackled first by the irrigation districts and companies, likely resulting in less expensive costs per cfs saved.

4.5 Diversions: Irrigation Season

The irrigation season runs from April 15th to September 15th. Diversion records for the irrigation season are available from the WUA annual reports and the Ecology on-line gages beginning in 2000 or 2001 for each diversion. During the irrigation season, the WUA takes periodic readings (bimonthly early in the season and then weekly readings) at staff gauges for each diversion, and at subsequent splits to different districts/companies. Starting in 2001, Ecology has operated continuous gauges at each of the five diversions from the river. There are then two different sources of diversion data from about 2001.

A couple of supporting analyses were undertaken in order to compare the WUA and Ecology diversion data, as well as to prepare the diversion data for analysis. These analyses and a brief summary of the results are as follows:

- a comparison of Ecology/CCD diversion data with the WUA data suggests that WUA readings are generally within 5 to 10% of the corresponding Ecology gage data. Given the continuous nature of the Ecology data, it is judged more informative of total water diverted and employed in the analysis of diversions.
- data on instream leasing (see above) is used to calculate the amount of water that would have been diverted in the absence of irrigators leasing water; in other words, the leased water for 2001, 2003-2005, and 2009 is added to the appropriate certificate and diversion data to arrive at the full potential call on water under each certificate, and these total diversions are used in subsequent analyses.

An inquiry into diversion trends was conducted for each of the five diversions. Steps taken include:

- using Ecology gage data: group 2005-2009 years (5 years), group 2001-2004 years (4 years)
- calculate average annual volume (Qa) diverted and annual average diversion (Qi)
- Compare Qa and Qi for the two periods

The results suggest that diversions were falling for all diversions during the period analyzed (Table 6). The Agnew ID results are presented below to illustrate the results:

- the average annual volume diverted during 2005-2009 was 3,392 as opposed to 3,975 during 2001-2004
- the average instantaneous volume diverted during 2005-2009 was 11.1 as opposed to 13.0 during 2001-2004

- on average diversions were reduced from the earlier to the later period by 1.9 cfs or in volume terms by 583 AF

Table 6. Reductions in Irrigation Season Diversions, from 2001-2004 to 2005-2009

Diversions	WUA Totals	Agnew	Highland	Indep.	CCD	Prairie
Average Instantaneous Diversion Qi (cfs)						
2001-2004	59.9	13.0	10.5	5.9	16.6	13.9
2005-2009	51.3	11.1	7.9	5.2	14.3	12.8
Reduction	8.6	1.9	2.6	0.7	2.3	1.1
Reduction (%)	14%	15%	25%	12%	14%	8%
Average Quantity Diverted Qa (AF)						
2001-2004	18,295	3,975	3,193	1,795	5,082	4,250
2005-2009	15,643	3,392	2,399	1,591	4,355	3,906
Reduction	2,652	583	794	204	727	344
Reduction (%)	14%	15%	25%	11%	14%	8%

Note: CCD diversions in 2009 were 10.3 cfs on average, which would add another 4 cfs to the total reduction in diversions of 8.6 cfs

To identify if there was variability during the irrigation season, i.e. an increase during one period masked by a decrease during another period, the following analysis was also undertaken:

- averaging diversions for every 7-day period during the irrigation season for each year
- averaging those for each of the two groups of years
- comparing the figures fore each of the two groups of years

The results for Agnew ID show the following:

- every 7-day period shows lower diversions on average during 2005-2009 than in 2000-2004
- the average reduction for the full period for each 7-day period is 2.3 cfs or 16% lower than for 2001-2004

Trends similar to those observed at Agnew's point of diversion are observed for the other points of diversion. The reductions for the 7-day analysis are as follows:

- Independent - average reduction of 1.0 cfs or 16%
- Highland - average reduction of 3.2 or 27%
- Sequim Prairie - average reduction of 2.8 cfs or 17%
- CCD – an average reduction of 2.7 cfs or 16%. However, since the Combo project was completed in 2008, it may be more instructive to compare 2009 data with 2000-2004 data, in which case the results suggests a 6.2 cfs decrease or 36% (matching roughly the expected savings for the project).

These diversion reductions can be added up since they are all averages. For the later period, total diversions averaged 51.3 cfs for a reduction of 8.6 cfs over the prior period. The savings total 2,652 AF/yr between the two periods. Including 2009 CCD diversions instead of the average for CCD for that period would drop diversions by another 4 cfs, increasing savings to 12.6 cfs. Again, it is important to note that the 7-day analysis suggests that these declines in diversions are strong in percentage terms across the whole season.

Historical data provided in the MOU between the WUA and Ecology (based on the 1999 Montgomery Report) suggest diversion levels exceeding 100 cfs in the 1980s, an average of 79 cfs between 1990 and 1995, and an average of 62 cfs from 1996 to 2001. It is worth noting that the intensive two-year hydrogeological investigation carried out by USGS in the late 1990s reported average diversions for 1996-1997 of 74.4 cfs. In sum, the available evidence suggests a steady and continued downward trend in diversions over the last 30 years by as much as 50 cfs, i.e. from 100 cfs in the 1980s to 50 cfs in 2005-2009. Using the USGS numbers and recent gage data, it would appear that instream flow has increased by around 23 cfs since 1996-1997. The analysis presented above based on gaging in place since 2001 suggests a reduction from 8.6 to 12.6 cfs between the 2001-2004 period and the 2005-2008 period, depending on the numbers selected for the CCD diversion.

5. Trust Water Memorandum of Understanding

In 1998 the WUA signed a landmark Memorandum of Understanding (MOU) with Ecology. The MOU was an effort both to officially recognize past changes with regard to water use in the Dungeness and to set in motion a number of agreements and rules about how future water use and conservation would be carried out. Perhaps the most remarkable element of the MOU was that it officially formalized the WUA's commitment to decrease their diversions to help maintain more stream flow for fish.

With regard to past changes in water use, the MOU set a new baseline for WUA water rights based on actual beneficial use. In the MOU, the WUA member's water rights were "tentatively" determined by Ecology and listed in the MOU at a collective maximum diversion rate of 156 cfs, instead of the prior 518.6 cfs (see Table 1). This number was based on the full capacity of each system individually, although it was acknowledged at the time that diverting the full amounts simultaneously at the maximum per system would be a very unlikely event. Further a limit of 7,000 acres of irrigation and 33,139 acre-feet of water were set based on maximum historical irrigated acreage.

The MOU sets forth the formula whereby saved water (both past and future) would be determined and transferred into the State's Trust Water Program (the Trust). Based on conservation measures implemented prior to signing, the MOU specifies that 4,700 AF or 15.5 cfs is the initial quantity of WUA water rights transferable to the Trust. This water is reserved as temporary trust water and is allocated 10.33 cfs to Ecology and 5.16 cfs to the WUA.

In general, the MOU specifies that water savings are to be allocated one-third to WUA for future adjudicated uses and two-thirds to the state for instream flows. The expectation in the MOU is that the WUA would leave their share of the saved water for instream use in the Trust, pending their development of adjudicated uses for the water (e.g. in bringing usage back up to the 7,000 acres limit). The WUA rights retain the original priority date of the underlying water rights and Ecology's rights are inferior to the 1921 Dungeness Irrigation District water right (with respect to WUA members but keeping original priority date with respect to other users).

With regard to future conservation actions and water savings, the parties to the MOU agreed to the following:

- the WUA agreed to limit their collective diversions year round to less than an instantaneous rate of 156 cfs and to no more than one-half of the flow in the river as measured at the USGS gauging station above Sequim (#1204800)
- the WUA agreed that any future use of saved water by the WUA (within the 7,000 acre limit) would meet or exceed the customary level of efficiency
- Ecology agreed to issue annual orders transferring water savings to temporary trust in accordance with the formula and procedures specified in the MOU

Once a period of years of record (but not over 10 years) demonstrates that no more significant water savings can be gained through conservation measures, then Ecology is to issue permanent certificates for Ecology's Trust Water and, as members of the WUA identify additional adjudicated uses, permanent certificates for these uses.

The MOU is only a memorandum of understanding, and included just a "tentative" determination by Ecology on the WUA water rights. However, the MOU (in Section VIII) clearly specifies that the terms of the MOU are to be recorded in orders by Ecology. It also states that the terms of water use described in the MOU and subsequent orders "shall become an addendum to and incorporated into each adjudicated water right certificate of the undersigned entities as permanent terms and conditions of their water right."

The MOU was signed by Board members representing each of the nine certificates and districts/companies that make up the WUA. Although, the limits on these water rights are specified on a collective basis; the MOU does not speak to how these provisions apply to each district and company.

This paper does not attempt to address the nature or substance of the MOU as a binding legal document. Rather, it focuses on what has happened with regard to surface water management, irrigation diversions, and instream flows since the MOU was signed. In doing so, it attempts to clarify the current status of conserved water in the Dungeness River, review compliance with the provisions of the MOU, and set the stage for discussions between WUA and Ecology regarding the issuance of superseding certificates.

6. Status of Conserved Water in the Dungeness River

Determining how much conserved water from the WUA certificates is currently protected as trust water in the Dungeness River is complicated for a number of reasons.

First, the main complication is that water can be protected in trust through two different approaches: first, via the MOU and its formula, and, second, by the more standard approach of filing individual trust water applications for specific projects. The amount and status of water protected by each of these methods is discussed below, before attempting to combine the two types of protected water.

Second, tracking trust water is also complicated because each batch of water protected may have a component allocated to the State and a component allocated to the WUA for future appropriative use. Water protected under the MOU is allocated two-thirds to the State and one-third to the WUA. For water protected because of specific conservation projects, the proportion of water going to the state varies with the requirements of the funder and percentage of public funding for the project.

Third, water may be protected in trust only for a limited period or it may be in perpetuity. Under the MOU, saved water is allocated to a "temporary trust". The meaning of "temporary" is not explicit; however, it likely relates to the language in the MOU that provides for a continual process of defining trust water based on a formula that is computed from actual diversion levels. As these diversions may go up, as well as down in the future, the water placed in trust must be regarded as only temporarily in trust – i.e. no permanence can be ascribed to these rights. On the other hand, for water protected in trust from a specific project and using standard Trust Water Rights Program protocols, water may be protected in trust for any amount of time, including in perpetuity. For time-limited trust water, once the trust expires, the water would presumably be restored to the originating certificate.

Fourth, each trust water right should have a priority date that allows management of that water against all other rights in the system. However, this is not always explicit or clear. The MOU states that trust water emerging from the MOU will be just junior to the full set of WUA member rights. For the specific

applications to trust, this may also be assumed to be the case, but is not made explicit on the Reports of Examination (ROEs) for the water that has been put in temporary trust. These documents do not provide the priority date of the trust water right. Further, as these applications are for a change in the individual certificate, any assumption that the application would be just junior to the originating certificate is different than making such a trust right junior to the full set of WUA member rights (as with the MOU). At present, WUA members do not enforce priority so this may not be a major problem; however, it adds to the uncertainty associated with any future claims to these rights.

Fifth, water protected under the MOU relies on figures for actual annual diversions by the WUA. As described towards the end of this report, there are a number of alternatives for measuring diversions. Depending on which approach is taken, the records will more or less accurately reflect annual average diversion amounts. There is also the larger question of whether the annual figure is the best measure of water saved, when the primary need for stream flow occurs late in the irrigation season.

Sixth, and finally, in gathering information on these projects, it was not possible to obtain final, signed copies of Reports of Examination for all the projects. No copies of final orders were obtained for any of the individual conservation projects. An order was obtained for the 2003 allocation of MOU trust water. In some cases, draft unsigned ROEs were provided, and in others signed amendments were obtained. In addition, in the case of one project – the Sequim Prairie re-regulating reservoir project – there were discrepancies between what the Company thought it had requested from DOE and the trust water numbers that were on the ROE. Subsequent correspondence on this project was also obtained regarding additional changes to the trust water on the project; however, matching ROEs were not found. Efforts are still underway to gather the relevant signed copies.

Because of the lack of information, it is not possible to review the documentation and arrive with complete certainty at a precise number for what "should be" in trust. Further, there is no accounting for how much trust water of what duration and priority date has accrued to the State and each WUA member. Data gaps might make this a difficult task.

Nonetheless, with a view towards informing future negotiations about superseding certificates, an effort is made to work through the two types of trust water, quantify where possible what is already in trust and what might go to trust in the future, and to simply break down this information between the State's share (i.e. Ecology) and the WUA share. Further discussion and negotiation by the WUA would be required to resolve how their share is to be allocated and the purposes to which it can be applied.

This section first covers individual trust water right filings and then turns to calculation of saved water under the MOU. The two figures are reconciled as best as possible with the conservation projects and then reconciled one with the other in order to sum up existing and pending trust water.

6.1 Trust Water from Conservation Projects

The irrigation districts and companies in the Dungeness have worked with the Clallam Conservation District over a decade or more to tap into public grant funds aimed at implementing water quality and water conservation projects. The Washington State Conservation Commission (WSCC), through a contracted partnership with the Washington State Department of Ecology, administers the Irrigation Efficiencies Grant Program (IEGP). The program began in 2001 as an appropriation to Ecology that directed money to local conservation districts within 16 drainage basins identified as supporting Endangered Species Act-listed fish and being critically susceptible to drought. Starting in 2004, the Conservation District began accessing the IEGP funds for conservation projects. This has been a successful partnership. The WSCC website indicates that through 2008, 21% of all IEGP water savings occurred in the Dungeness River basin.

IEGP funded projects have a requirement that saved water paid for by public funds be immediately placed in the State's Trust Water Rights program. This is accomplished through an extensive application process involving a public notice and comment period and culminating with a Report of Exam (ROE) and subsequent Final Order. As part of the application process, Ecology personnel provide a determination of saved water on a project-by-project basis.

Compilation and review of trust water application files for the Dungeness River Basin was carried out to determine the amount of conservation project water generated by WUA members currently protected in trust. Documents were acquired at the Ecology offices in Lacey, WA; all relevant information in each file was scanned digitally. Table 8 below summarizes the data obtained in this manner. It is important to emphasize that a good portion of the documents obtained were not signed copies. Thus, the results compiled in the tables and reported here must be treated as provisional.

The ROEs specify the distribution of the trust water between WUA members and the State (Ecology). Unlike trust water protected under the MOU, this distribution varies from project to project depending on the share of IEGP or other public funding and other factors. The WUA member submitting the applications to trust received no trust water on 7 of the 11 projects, due to the proportion of public funding, or the omission of the WUA share from the application. Generally, Ecology and Conservation Commission staff encouraged WUA members to place 100 percent of the saved water into Trust. The conservation projects result in different periods of time that the saved water is protected in trust, with some in perpetuity and others for as little as 10 years (based upon the projected lifespan of the project). In total, 11 ROEs for IEGP projects have been issued, putting 10.8 cfs into trust, of which 9.71 cfs is allocated to the State and 1.09 is allocated to the WUA.

Table 8 also summarizes project data on saved water as received from the Conservation District. The differences between the numbers in the trust water documentation and the data provided by the Conservation District are minor. In some cases, WUA members declined to apply for their portion of the saved water or were urged to put all the saved water into Trust. In the case of the Sequim Prairie reregulating reservoir project, the Company intended to provide to trust only that portion of the saved water proportionate to the IEGP share of expenditure on the project. Not only did this percentage vary from beginning to end of the project resulting in requests by the IEGP to alter trust water numbers (after ROEs had been issued), but Ecology ordered the total saved water to be allocated to instream and future adjudicated uses. The analysis uses the numbers found in the ROE even though they may not reflect Sequim Prairie's intent or the IEGP request.

According to the Conservation District, there are two Dungeness Irrigation District projects (DID-M3-2 and DID-CP) that were combined for the purposes of filling an application for trust water, but for which a corresponding ROE could not be located at Ecology. Unfortunately, the exact amount of trust water that will emerge can only be estimated based on initial numbers for the saved water as provided by the Conservation District. Once a final order is issued, these two projects could provide 2.1 cfs of water to trust, with 1.5 cfs to the state and 0.6 cfs to the WUA. A summary of water in trust by entity for both approved and pending applications is provided in Table 7. Of a potential total of 12.89 cfs, the state share is likely to be 11.21 and the WUA share is 1.68. Again, these shares are determined by the source and amounts of financing by these projects.

Table 7. Summary of Trust Water by District/Company

District	Total to Trust	State Share	WUA Share
Finalized ROEs			
Clallam Ditch Co	2.58	2.51	0.07
Dungeness Group	1.54	1.51	0.03
Cline ID	3.18	3.18	-
Sequim Prairie Tri	3.45	2.47	0.98
Dungeness ID	0.04	0.04	-
Subtotals	10.79	9.71	1.08
Pending Applications			
Dungeness ID/Sequim P.Tri	2.10	1.50	0.60
Grand Totals	12.89	11.21	1.68
Expiring Trust Water			
Never (in perpetuity)		6.08	-
by 2031		3.63	1.08
by 2014		1.82	0.91
Totals (in perpetuity plus expiring by 2031)		9.71	1.08

Notes: The total put into trust as shown above does not exactly equal the estimates of water saved as provided by the Conservation District. This is due to small reductions in conserved water as applied for by the State versus the saved water estimates. The difference amounts to only about 0.26 cfs.

Table 7 also summarizes the existing trust water from projects in terms of the expiration date. Expiration dates are typically set to match the length of life of the corresponding investment in water conservation measures. Notably, none of the WUA share of water in trust is effective in perpetuity. The entirety of the WUA share is slated to expire by 2031, and indeed a large share of it (0.91 cfs of the 1.08 cfs total) runs through March of 2014. A total of 6.08 cfs of the state's share is protected in perpetuity, consisting of the water protected through the CCD Combo project and piping of related laterals.

The Conservation District also provided information on a number of conservation projects that generated saved water but have not been required to put this water into trust (see bottom half of Table 8). These projects are only a portion of the additional conservation projects that WUA members have undertaken. For the projects for which we collected data from the Conservation District, a total of 2.4 cfs of saved water is expected. When added together with the saved water estimates for projects filing trust water applications, the total of saved water is approximately 15.5 cfs on the conservation projects for which data was gathered from the Conservation District.

Table 8. Saved and Trust Water from Conservation Projects

Project Name	District	Total Water Saved Qi (cfs)	Total Water Saved Qa (AF)	Trust Water Application Date	Distribution of Saved Water (% state)	Distribution of Saved Water (% WUA)	Trust Water for State Qi (cfs)	Trust Water for State Qa (AF)	Trust Water for WUA Qi (cfs)	Trust Water for WUA Qa (AF)	Trust Expiration
Finalized Trust Water ROEs											
CCD Combo Phase 1&3	Clallam Ditch Co.	2.10	640.33	16-Nov-06	100%	0%	2.10	640.33			Perpetuity
Taylor Cutoff & Heath Rd Lateral (C-1,C-4)	Clallam Ditch Co.	0.48	146.36	5-Jan-04	85%	15%	0.41	125.02	0.07	21.34	6-Feb-29
CCD Combo Phase 1,2&5	Cline ID	3.10	945.25	16-Nov-06	100%	0%	3.10	945.25			Perpetuity
Wheeler Rd Lateral (CL-3)	Cline ID	0.12	36.59	5-Jan-05	67%	33%	0.08	24.39			Perpetuity
Howat, Drip System (DH)	Dungeness ID	0.04	10.67	16-May-06	100%	0%	0.04	10.67			22-Aug-16
CCD Combo Phase 3	Dungeness Group	0.80	243.94	16-Nov-06	100%	0%	0.80	243.94			Perpetuity
Main Canal to Matriotti (M-4)	Dungeness Group	0.65	198.20	10-Apr-06	100%	0%	0.55	167.71			30-Oct-31
Cameron Rd Lateral (DC-7)	Dungeness Group	0.20	60.98	9-Feb-04	85%	15%	0.16	48.79	0.03	9.15	29-Mar-29
Port Williams Reservoir 1&2 (SP-Res1/2)	Sequim Prairie Tri	2.75	838.53	29-Mar-04	67%	33%	1.82	554.95	0.91	277.48	10-Mar-14
Priest/Hendrickson Lateral (SP-1,SP-2)	Sequim Prairie Tri	0.46	140.26	4-Mar-06	76%	24%	0.35	106.72			15-Sep-31
SVF Low Pressure Boom	Sequim Prairie Tri	0.35	106.72	18-May-04	80%	20%	0.30	91.48	0.07	21.34	4-May-19
Subtotals		11.05	3,367.84				9.71	2,959.25	1.08	329.31	
Trust Water Applications											
Split to Hendrickson, Cameron Phase 1 (CP, M-3)	Dungeness ID/SPTI	2.10	640.33	10-Feb-09	85%	15%	1.50	457.38	0.60	182.95	Perpetuity
Subtotals		2.10	640.33				1.50	457.38	0.60	182.95	
Other Conservation Projects											
Hooker Rd. Lateral (A-8)	Agnew ID	0.21	64.03								
Carlsborg Road Lateral (C-3)	Clallam Ditch Co.	0.40	121.97								
Clark Rd. Lateral (CL-13)	Cline ID	0.14	42.69								
Headgate to Split (M3-1)	Dungeness ID	0.80	243.94								
Carlsborg Lateral (DC-1)	Dungeness Group	0.57	173.80								
Kitchen Dick Lateral (DC-5)	Dungeness Group	0.25	76.23								
Smith Ditch to Myco Site (H-15)	Highland ID	0.03	9.15								
Subtotals		2.40	731.81								
Grand Totals		15.55	4,739.98				11.21	3,416.63	1.68	512.27	

Notes: CCD stands for Cline ID, Clallam Ditch Co. and Dungeness Group.

6.2 Trust Water from the MOU

The MOU served as a mechanism for acknowledging pre-existing WUA member efforts to conserve water as well as provide incentives for further water conservation efforts. To do this, the MOU proposes a performance-based incentive system where the WUA are rewarded for reducing their diversions from the Dungeness River. As opposed to project-specific actions that result in trust water (as covered above), the MOU sets forth procedures for quantifying saved water based on diversion records, and then provides the rules for how this water is allocated between the State and the WUA. These procedures and rules are specified for a retroactive allocation at signing, as well as annual allocations going forward for the life of the MOU. A critical element of this MOU trust water is the supposition in the MOU that the WUA share of any such trust water is held in reserve for future appropriation by the irrigators.

The MOU sets forth clear guidelines for how the diversions are to be measured and reported. For the period from 1990 to 1997, the average diversion numbers are specified in Appendix B of the MOU. In future years, the individual irrigation companies/districts are to measure their own diversions in cfs on a bi-weekly (or more often) basis between April 15 and June 15. For the remainder of the irrigation season, they are to measure their own diversions on a weekly (or more often) basis. The MOU indicates that the measurements should not occur on the same day each week. The WUA members are then to submit a report (with their irrigation diversions for the past season) to Ecology no later than December 1 of each year. In a separate report, the companies/districts are to annually provide information on irrigated acreage. This report, which is also due by December 1 of each year, is to include a count of the acres that received no water but had been irrigated in previous seasons and a count of acreage that received water but had not previously been irrigated.

The MOU also specifies that Ecology is then to summarize the information on diversions and acreage and calculate the volume of water diverted by each company/district, the amount diverted overall and the acreage served. Ecology is to make this report available to the WUA no later than the end of January following each irrigation season. Ecology is then to process orders on an annual basis placing this water into trust. It is worth noting that the MOU is clear that the WUA measurements should be the basis of the saved water that is calculated for placement in trust. At the time the MOU was signed, the Ecology gages on each diversion were not in place. The MOU also specifies that the basis for cfs and acre-feet calculations is the 153-day irrigation season. If the season on the Dungeness certificates is assumed to be through and including September 15th, the correct number of days would be 154.

With respect to quantifying the retroactive allocations of trust water, the MOU describes the 1998 transfer of saved water instream that was to occur upon signing of the agreement. The baseline for the 1998 transfer is the average of season-long diversions from 1979 to 1989. The saved water is then calculated based on the average of diversions between 1990 and 1993. These calculations are listed in Appendix B of the MOU, and subsequently finalized (with mathematical errors found in the MOU corrected) in the subsequent ROE. As a result, 4,700 AF or 15.5 cfs, are protected in temporary trust. Of the 15.5 cfs, one-third (approximately 5.17 cfs) is reserved for future adjudicated purposes for the WUA members (to be split based on the district or company's conservation efforts) and two-thirds (approximately 10.33 cfs) for instream purposes to be administered by Ecology.

Appendix B of the MOU also outlines how Ecology is to calculate the water to be placed in trust based on diversion trends in their annual January report. Ecology is to employ a running average of water use. This is derived in a given year of transfer by looking at the first four years of the prior eight-year period. Therefore, the baseline for transfer year 2002 is the average of diversions from the 1994-1997 period. The savings for 2002 are then determined by subtracting the four-year average of diversions from the average

diversion that applied in 2001 (i.e. for the 1993 to 1996 period). Ecology is then to issue an ROE transferring the calculated saved water into trust.

However, since the original transfer in 1998, the only other official transfer of water under the terms of the MOU was in 2003. In that year, Ecology submitted an administrative order placing an additional 7.1 cfs (2,154.5 AF) into temporary trust (see Table 9). The 2003 administrative order suggests skipping years in which an increase in diversions is recorded. In 2000. a change of -0.1 cfs (an increase in water use. not a savings) was calculated, so in this case the record shows a 0 for 2001 and in the next year the average is subtracted from the prior (1999) record. Numerically, treating a series of years at once is the same as comparing the initial baseline number with the number produced for the final year. So in the case of the 2003 ROE, when the 2003 number of 73.4 cfs (for the first four years of the eight-year period prior to the year of transfer) is compared with the corresponding number for 1999, or 80.5 cfs, the difference is 7.1 cfs.

Table 9. MOU Saved Water for 2003 ROE and Draft 2006 Allocations

	Period A		Period B		Water Savings under MOU:	Total Water to Trus		Trust Water for State		Trust Water for WUA	
Year of Transfer	First 4 years of 8 year period preceeding the year of Transfer	Average Diversions (cfs)	First 4 years of 8-year period 2 years preceeding the year of Transfer	Average Diversions (cfs)	Period B Diversions less Period A Diversions	Qi (cfs)	Qa (AF)	Qi (cfs)	Qa (AF)	Qi (cfs)	Qa (AF)
1998	1990-1993	80.5	DOE Determination of 96 cfs based on water rights of 7,000 acres @4.5 AF/Acrd or 29,250 AF								
Order No. DE98 WR-S196 (1998)					15.5	15.5	4,700.0	10.33	3,133.33	5.17	1,566.67
1999	1991-1994	78.1	1990-1993	80.5	2.4	2.4	728.3				
*2000	1992-1995	78.2	1991-1994	78.1	-0.1	0.0	0.0				
2001	1993-1996	76.2	1992-1995	78.2	2.0	1.9	576.6				
2002	1994-1997	75.2	1993-1996	76.2	1.0	1.0	303.4				
2003	1995-1998	73.4	1994-1997	75.2	1.8	1.8	546.2				
Order No. 03WRSR-5772 (October 2003)					7.1	7.1	2,154.5	4.73	1,436.33	2.37	718.17

Notes: The shaded figures demonstrate how taking the yearly difference is the same as taking the difference from a given start and end year.

The full numbers are shown in Table 9 for the 2003 ROE. Again, the 7.1 cfs is split, one-third (2.37 cfs) to the WUA for future adjudicated purposes and two-thirds (4.73 cfs) for instream purposes to be administered by Ecology.

6.3 Diversion Records for MOU Trust Water Calculations

Given the availability of diversion data through 2009, the MOU trust water calculations can be carried out to the 2014 transfer year. At that point, the comparison period for calculating trust water would be the years 2006 to 2009. In other words, the information to calculate saved water under the MOU through 2014 is already available. The question is which diversion measurements to use and how to compile them. Correspondence between Ecology and the WUA in 2006 provides a "draft" of the potential MOU trust water through transfer year 2006. Unfortunately, the actual diversion numbers are not provided and it is necessary to back calculate the diversion numbers from the saved water figures. This provides numbers for diversions for 1998 through 2001. As indicated earlier, data obtained for WUA records begins in 2000. However, the WUA readings currently available do not match those that are back calculated from the 2006 Ecology documentation. Given this issue, the WUA records are used to shed light on diversions from 2000 forward. The 1998 figure for diversions is back calculated from the 2003 order and the 1999 figure is likewise back calculated from the 2006 documentation from Ecology. Data provided subsequently by Ecology appears to provide WUA records from 1996-1999. In the end, as acknowledged above, when calculating forward to transfer year 2014 the interim figures are of little consequence. The starting point is taken from the 2003 Order with diversions of 73.4 for the 1994-1997 period.

There are at least four ways to calculate the average diversion for a given irrigation season given the information that the WUA produces each year:

- the number reported directly by the WUA (the source of which is unclear as the sheets are hard-coded)
- a simple average of all readings during the irrigation season
- the reported annual acre-feet converted to cfs
- use of the periodic readings to calculate a weighted average acre-foot for the season which is then converted to an annual average cfs

In addition to the WUA diversion measurements, Ecology has operated diversion gages on the five major diversions on the Dungeness River since 2000. A separate analysis shows that the automatic readings from these gages are generally within 5 to 10% of the manual staff gage readings. However, the increased periodicity of the Ecology gages means they produce a much more accurate season long record of total acre-feet diverted.

Regardless of which approach is chosen, there were no WUA or Ecology gage readings for the CCD diversion during 2007-2008 as the "Combo" project was installed. There is then a two-year gap in the data record that affects the calculations beginning with transfer year 2012.

Despite these limitations, diversion figures were compiled for the WUA records and the Ecology diversions. A summary of these figures from 1979 to 2009 are provided in Table 10. The various diversion records are all reported in the table so that the range of possible values is made clear. In subsequent calculations made below, the shaded values are used. The WUA numbers are employed because they are called out in the MOU. The weighted average approach is used as it avoids allowing the frequency of measurements to skew the results. For example, with many more measurements made during the peak irrigation season, a simple average of all irrigation season diversion figures provided by WUA would tend to overstate diversions.

Table 10. Annual Irrigation Season Diversions, Summary of Different Measures 1979-2009

Flow Year	DOE Documents			WUA Records			Ecology Gages	
	1998 MOU Data	2003 Order (Reverse Calcs)	2006 Ecology Notes (Reverse Calcs)	WUA Reported "Average Rate"	Weighted Average Unadjusted	Weighted Average Adjusted for Leases	Average of Unadjusted Data	Average of Adjusted Data
1979	120.6							
1980	102.8							
1987	114.9							
1988	102.5							
1989	105							
1990	81.8							
1991	84.9							
1992	78.7							
1993	76.7							
1994	72.1							
1995	85.2							
1996	70.9							
1997	72.6							
1998		64.9						
1999			53.6					
2000			49.3	52.7	52.4	52.4		
2001			53.4	56.4	55.9	58.1		
2002				64.4	62.7	62.7	69.0	69.0
2003				53.2	53.3	56.4		
2004				62.1	62.3	65.6	63.6	67.3
2005				49.4	49.8	52.9	50.6	54.6
2006				54.4	54.5	54.5	56.4	56.4
2007								
2008								
2009				43.7	45.9	46.3	50.4	51.0

Calculation of additional trust water that would be available in transfer year 2014 is derived based on the diversion information above for the average of WUA weighted average 2006-2009 readings, which total 50.4 cfs. In sum the additional total trust water that would accrue from transfer year 2004 through 2014 is 23 cfs (73.4 cfs less 50.4 cfs). In Table 11 the MOU trust water figures are combined to show the hypothetical total trust water as measured under the formula and procedures set forth in the MOU.

Table 11. Hypothetical MOU Trust Water through Transfer Year 2014

Type of Trust Water Allocation	Date	Total Trust Water		State Share		WUA Share	
		Qi (cfs)	Qa (AF)	Qi (cfs)	Qa (AF)	Qi (cfs)	Qa (AF)
MOU Water Already in Trust							
as of 1998/MOU (1990-1993 data)	1998	15.50	4,700	10.33	3,133	5.17	1,567
as of 2003 (1995-1998 data)	2003	7.10	2,155	4.73	1,436	2.37	718
Potential Additions MOU Water to Trust							
as of 20014 (2006-2009 data)	2014	23.00	7,013	15.33	4,675	7.54	2,338
Total Potentially in Trust		45.60	13,868	30.39	9,245	15.08	4,623

6.4 Project and MOU Trust Water Reconciliation

The reconciliation of Project and MOU Trust water is presented in two forms. First, best estimates of water already protected in trust through ROE or final order is provided. This reflects the amount of water that has officially been recognized through the processing of trust water applications and action to date by Ecology on MOU trust water. Then the MOU trust water totals arrived at above through transfer year 2014 are reconciled with the conservation project trust water to arrive at a prospective amount of trust water and allocation of shares to Ecology and the WUA, given diversion levels through 2009.

The amount of water currently in trust is provided in Table 12. This is simply the sum of water put in trust by the 1998 and 2003 orders, as well as the various ROEs for conserved water projects. At present, there is just over 33 cfs of water in trust, of which 8.62 is allocated to the WUA for future adjudicated purposes.

Table 12. MOU and Conserved Water currently in Trust

Type of Trust Water Allocation	Date	Total Water in Trust		Trust Water for State		Trust Water for WUA	
		Qi (cfs)	Qa (AF)	Qi (cfs)	Qa (AF)	Qi (cfs)	Qa (AF)
MOU Water Already in Trust							
as of 1998/MOU (1990-1993 data)	1998	15.50	4,700	10.33	3,133	5.17	1,567
as of 2003 (1995-1998 data)	2003	7.10	2,155	4.73	1,436	2.37	718
Subtotal		22.60	6,855	15.06	4,570	7.54	2,285
Conservation Project Water Already in Trust							
as of 2010	Various	10.79	3,289	9.71	2,959	1.08	329
Total Water Currently in Trust		33.39	10,143	24.77	7,529	8.62	2,614

Unfortunately, the MOU does not address the possibility of applications for Trust Water from specific conservation projects, nor does it address the consequences of these for the calculation of MOU water. Since the process for arriving at MOU trust water relies solely on diversion data and therefore on how much water has actually been "saved", there is the potential to double count these savings if the conservation project water is added in on top of the MOU trust water. In a number of ROEs for individual conservation projects, Ecology acknowledges this possibility. A couple of the ROEs specify that the project trust water going to instream purpose is to be added to the annual diversion reports submitted by the WUA, thus avoiding double counting. The ROEs are not explicit as to whether this provision for double counting applies to the project trust water set aside for future adjudicated uses.

Another way to produce net calculations is to subtract out the conservation project water from the MOU water. In other words, using actual diversion figures to calculate MOU water going to trust ignores that a certain amount of the decreased diversion resulted from projects, which are already in trust. Doing otherwise double counts the conservation project water.

To determine how much water should actually be in trust at a given point, there are further issues related to potential discrepancies between project water and MOU water with respect to the length of time water is protected in trust. The MOU characterizes saved water as going into temporary trust until after "several years of record, not to exceed ten years in length, indicate there are no more significant water savings being gained through conservation measures, permanent trust water certificates will be issued." It would appear that if superseding certificates were not issued prior to the expiration of project trust water, then the temporary project water could become permanent under the MOU. Regardless it would not be double-counted if there were a final reconciliation. However, the lagged manner in which MOU water is calculated makes coordinating such effects a complicated exercise.

The approach taken here is to use the diversion data through 2009 and simply subtract out the conservation project trust water that is protected in perpetuity. At some point in the future all other conservation project water will come out of trust and simply be captured in the MOU trust water. The results are shown in Table 13. From the total of 45.6 cfs of potential MOU Trust Water (see Table 11), the 6.08 of conservation project that is protected instream as the State's share in perpetuity is deducted. The resulting total of 39.52 is then apportioned according to the proportions set in the MOU for the State and WUA share (2/3 and 1/3 respectively). To arrive at the reconciled totals for trust water, the 6.08 cfs must then be added back in to the total as an allocation to the State. The results then suggest that the State should eventually hold 32.43 cfs and the WUA should have available for future adjudicated uses a total of 13.17 cfs.

Table 13. Reconciliation of MOU and Conservation Project Trust Water

Type of Trust Water Allocation	Date	Total Trust Water		State Share		WUA Share	
		Qi (cfs)	Qa (AF)	Qi (cfs)	Qa (AF)	Qi (cfs)	Qa (AF)
MOU Trust Water (based on Diversions thru 2009)							
Total MOU Water	2014	45.60					
Deduction for Conservation Project (IEGP) water protected in perpeutity		6.08	1,854	6.08	1,854		
Allocation of MOU Water		39.52	12,050	26.35	8,035	13.17	4,016
Reconciled Trust Water in Perpetuity (based on Diversions thru 2009)							
Total MOU Water		39.52	12,050	26.35	8,035	13.17	4,016
Conservation Project Water		6.08	1,854	6.08	1,854		
Grand Total Trust Water		45.60	13,904	32.43	9,889	13.17	4,016

6.5 Conclusions on Trust Water

Given the formula and procedures employed in the calculation of MOU, trust water credit is given after the signing of the MOU for water savings that originated prior to the MOU (for example the 2003 water). Here a brief attempt is made to summarize water savings and trust water that has been generated by actions following the MOU.

The earlier review of Conservation District data on conservation project expenditures in the Dungeness since 2000 show over $7.7 million of public funds spent, largely piping of canals and ditches. These projects appear to have physically saved about 15.5 cfs of water by reducing conveyance losses and hence diversions from the River. In 1998, total WUA diversions during the irrigation season were calculated as 64.9 cfs. In 2009 diversions were 46.3 cfs. This is a total savings of 18.6 cfs. This figure can be used as a rough indicator of the reduction in annual average diversions since the MOU was signed. Of this total, it appears that 11.21 cfs of water savings (see Table 8) was effectively paid for by IEGP funds (counting pending applications). Implicitly this leaves water savings of 7.4 cfs as the share financed by WUA members. Of this amount, almost 2 cfs comes from the WUA portion of the trust water associated with the conservation projects and another 2.4 from the non-IEGP projects (shown in Table 8). This gives a subtotal of savings of 15.6 cfs (11.2 + 2.0 + 2.4 cfs). It appears that in addition to the projects documented by the Conservation District, the WUA has saved another 3.0 cfs of water through implementation of projects independent of the Conservation District and improved management.

The average cost of conservation projects since 2000 as reported above is approximately $500,000/cfs. Many of the additional savings (the 7.4 cfs) realized by the WUA were probably not realized through highly capital-intensive projects, such as were facilitated by the Conservation District. However, as a

placeholder, it is possible to suggest that an upper limit on the cost incurred by the WUA contribution to lowered diversions would be $3.7 million.

7. MOU Compliance: Minimum Flow Agreements and Diversion Limits

As stated earlier, the MOU affects the WUA diversions to the benefit of stream flows in two ways:

1. diversions by the WUA should never exceed 156 cfs

2. diversions by the WUA should never exceed half of the flow at the USGS gage. For example, if WUA demand is 80 cfs but the USGS gage records 140 cfs available then the WUA must limit itself to a 70 cfs diversion, sacrificing 10 cfs.

These commitments are effectively "diversion reduction agreements." The first is an absolute limit and the second depends on stream flow levels.

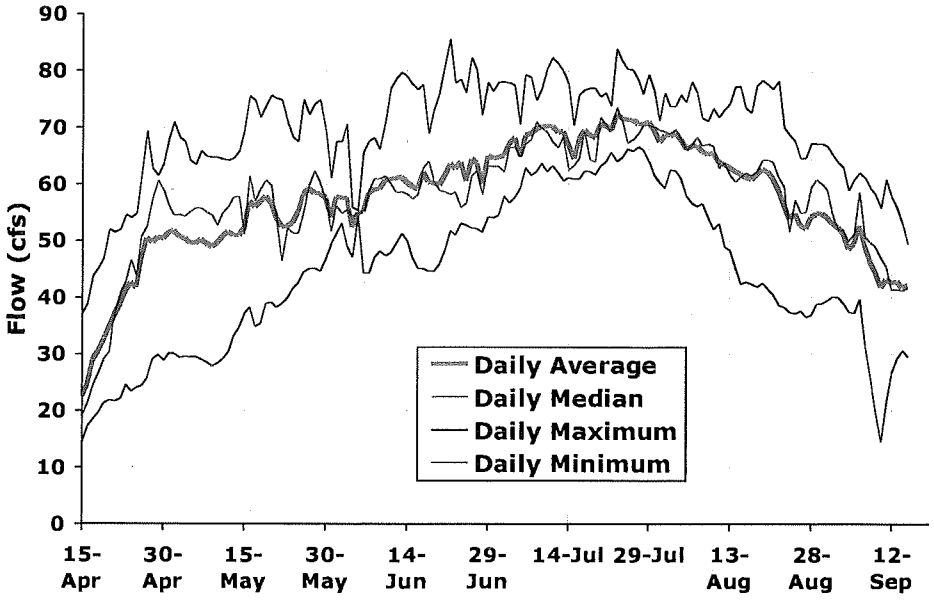
Before assessing compliance with these agreements, it is useful to evaluate how any of the preceding discussion of trust water, either leasing or conserved water, interacts with these commitments. With respect to leasing, the language in the MOU did not deal with the eventuality that the total call on the water rights might consist of diversions under the certificates and water leased instream under the certificates. Nor does it explicitly recognize how conserved water placed in trust under the MOU or via direct applications to Ecology (i.e. under IEGP projects) would be reconciled. Strictly speaking, the language makes these commitments for the "diversion" of water, and thus compliance can be evaluated by looking just at diversion numbers. However, given the analysis already conducted. it is worth briefly assessing how the evaluation of compliance might change if the basis were not "diversions" but the total call on water under the certificates (whether that call is for diverted water or instream water). This assessment follows once compliance against "diversions" is evaluated.

7.1 WUA Diversions

To assess these questions, it was necessary to combine the individual diversion information into a single total for the WUA members as a whole. This was accomplished by aggregating daily data from the five diversions for both the Ecology gage data and the WUA records. Days on which there was no data from one or more of the diversions were not included in the data set. For both data sources this meant that there were no figures for 2007 and 2008. For the Ecology data set, and excepting 2007 and 2008, a complete data set exists on 80% of the days in the irrigation season. For the WUA, and again excepting the 2007 and 2008 years, readings were available on 11% of the days during the irrigation season. The lower number for the WUA simply reflects the terms of the MOU, which required sample diversions only on a periodic basis.

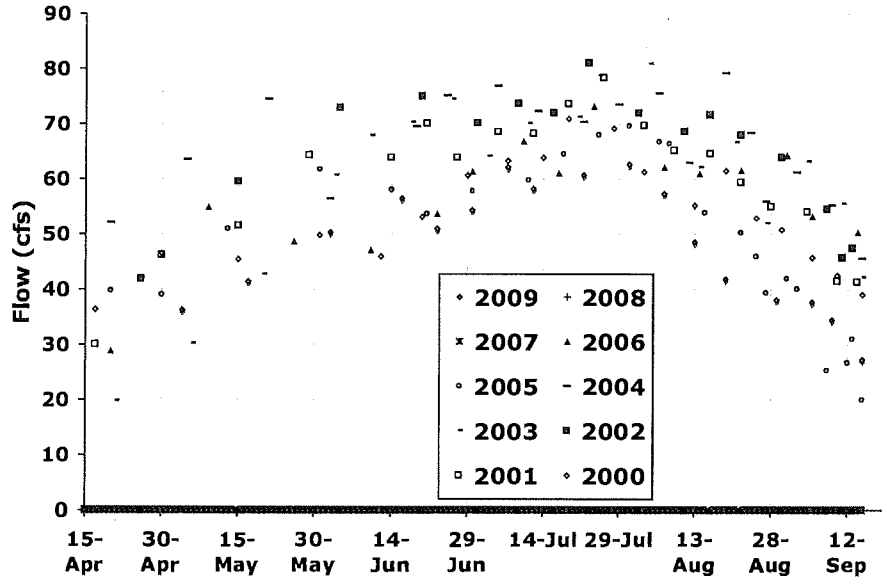
Two additional data sets for the diversion data were then created by including water that was leased instream during the late season (see Table 4). This was carried out for both the Ecology and WUA data sets; these data sets are denoted in the figures as "adjusted for water leased". The daily maximum, minimum, average and median total WUA diversions for the Ecology data (adjusted for leasing) are shown in the figures below Figure 2. Because of the limited sampling inherent in the WUA data, such statistics are not as useful. Instead, the actual WUA totals are plotted by day and year in Figure 3.

Figure 2. WUA Diversions Statistics, 2001-2009



Notes: Ecology gage data adjusted for leasing activity.

Figure 3. WUA Diversions Statistics, WUA data



Notes: Ecology gage data adjusted for leasing activity.

7.2 Dungeness River Stream Flow

To examine compliance, it is necessary to examine diversions against inflows into the system as measured above all diversions at the USGS gage. The two figures below show the maximum, minimum, average and median daily rate of flow at the gage for the last ten years from 2000 to 2009. The figures present two perspectives, first a chart for the entire irrigation season, and then a chart just for the last month, from August 16 to September 15.

Figure 4. Dungeness River Stream Flow Above Diversions: Irrigation Season, 2000-2009

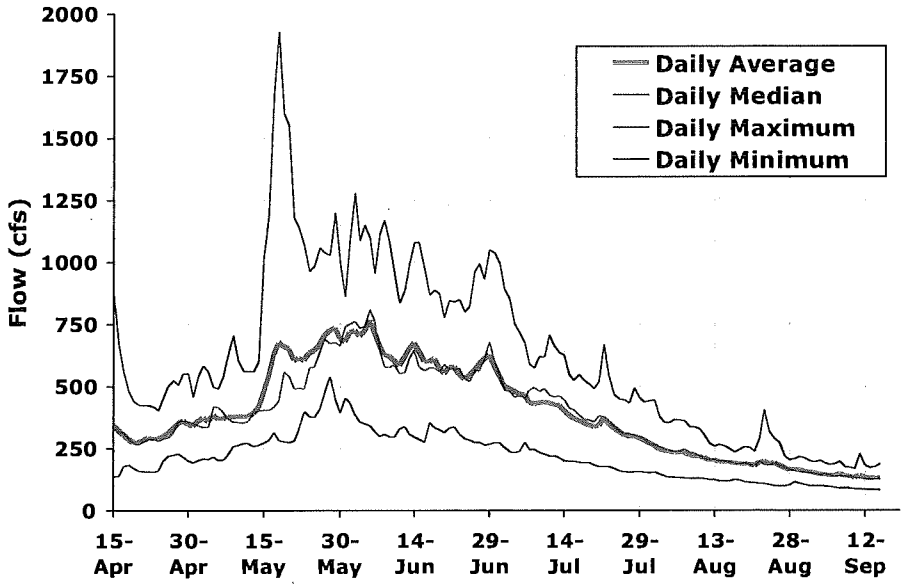
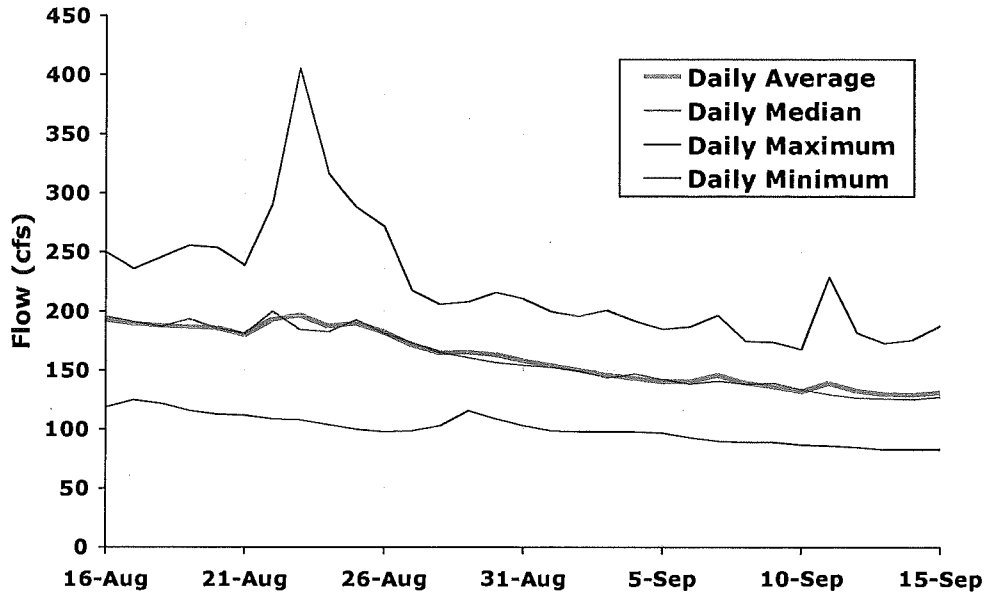


Figure 5. Dungeness River Stream Flow Above Diversions: Last Month of the Irrigation Season, 2000-2009



7.3 Diversion Limit of 156 cfs

A thorough review of diversion records (and the figures above) suggests that the WUA is in full compliance with the 156 cfs diversion limit:

- since the Ecology gages first were all in operation in August of 2001, the highest single day diversion amount was 85.6 on June 22, 2002 (this figure stands as the maximum, even when late season lease water is included in the calculations).
- since the WUA began keeping records in 2000, the highest single day diversion amount was 81.1 on July 22, 2002 (this figure also stands out with the late season lease water added to the calculations).

7.4 50/50 Diversion Limit

The 50/50 limit specifies that diversions by the WUA should never exceed half of the flow at the USGS gage. With maximum diversion levels reaching 80 cfs (see Figure 3) and minimum flows dropping below 100 cfs, there is at least the possibility that this rule might have been invoked and WUA members asked to reduce their diversions. On the other hand with average diversions more like 60 cfs and average stream flow only dropping to 130 cfs at the very end of the season, it may never have been invoked. Unfortunately, there are no official records from Ecology or the WUA that confirm that this provision of the MOU was ever employed. For their part, the irrigators suggest it may have come into play only in 2005, when the WUA asked water users, particularly residential users, to cut back on their water use.

It would be difficult, if not impossible, to use the diversion and stream flow records to categorically prove that on a given day or days irrigators voluntarily reduced demand to accommodate lower stream flow levels. Given that stream flow and diversions typically trend in one direction or another from day to day, all that can be done is to assess whether there were periods when this limit would have been close to being invoked. This can be done by comparing diversion and stream flow data on each day of the

irrigation season in each year. When this is done with the Ecology continuous gage data – which would be the easiest way for the WUA and Ecology to monitor the agreement – it can quickly be determined that diversions never reached 50% of stream flow. In fact, setting a threshold of 45% and rechecking the data turns up only three days in which diversions exceeded 45% of stream flow. Not surprisingly, these days turn up in 2005. This matches irrigators' recollection that during this period, they began instituting voluntary water use reductions through press releases and direct requests to users. On July 28, July 30 and July 31 of 2005, diversions were in the 45-46% range with respect to stream flow. Interestingly, on July 29, 2005, the 45% mark was not exceeded. This could reflect the impact of the WUA's efforts at voluntary reductions in diversions once the 50% mark was approached. Indeed, on July 28, WUA diversions totaled 66.1 cfs. Over the next four days, these dropped to 64.1, 61.7, 60.4 and 59.4, before returning to around 62 cfs. Over these few days, river flows continued their "random walk" downward declining but only a couple of cfs. In other words, it appears that the WUA districts and companies reduced their diversions as the 50% mark was neared.

As shown in the figures above, WUA diversions tend to peak in July and decline in August. Stream flow continues to drop throughout the last couple of months of the irrigation season and after. Water leasing has not occurred until August 1 at the earliest. While it is not clear that either Ecology or WUA would interpret the MOU to include all water called under the MOU and not just actual physical diverted water, it is worth rerunning the analysis with the Ecology diversion data adjusted for leasing. Interestingly, once this is done, the early August period in 2005 continues to exceed the 45% mark and, ultimately, on August 9, diversions reach 51% of stream flow. In addition, in 2006 a few days in mid-August cross the 45% mark but then quickly fall back under this level.

This same analysis is undertaken for the WUA readings, both unadjusted and adjusted for leasing. For the unadjusted figures, the same pattern repeats as for the Ecology data. The WUA carried out monitoring of diversions on July 31, 2005 at which point diversions were 46% of stream flow at the USGS gage. This highlights that had the WUA been relying solely on their readings, they would have missed how close diversions were to the trigger starting on August 28. No other days in the 2000-2009 period broke the 45% mark for the unadjusted WUA readings. Once diversions are adjusted for leasing, the same pattern as observed for the Ecology gage appears with respect to 2005 and 2006. On August 8, 2005, on an adjusted basis, diversions reached 50% of stream flow.

In other words, this provision of the MOU appears to only occasionally have caused the WUA to institute voluntary measures to reduce diversions. Such action appears to have been undertaken by the WUA on its own volition to remain in compliance under the MOU. No evidence was found, however, of any correspondence on this matter between WUA and Ecology. Ecology does not appear to have called on water under this agreement, and indeed the threshold was barely if ever exceeded. Given the apparent lack of efforts by Ecology to monitor this provision and ensure compliance, and the lack of any reporting by the WUA on its compliance actions, it seems this provision was of some but not major consequence to WUA operations. It is also not surprising that the issue of whether the agreement should have in effect been called on in early August 2005 once the leases were in place never arose. Even if compliance were based on diversions adjusted for leasing, the WUA would have exceeded the limit only on a single day during the ten-year period and by just 1 cfs (well within measurement error of the gages).

7.5 Impact of Conserved Water on Compliance

With respect to conserved water placed in trust under the MOU, the State's share is expected to be instream in perpetuity. The WUA share is expected to be left instream until it is withdrawn from trust for appropriation under the terms of the MOU. However, under the terms of the MOU, the State's share is junior to the 1921 Dungeness ID right. In other words, exercise of these rights does not impinge on the exercise of any of the WUA rights. In the case of the WUA's share of trust water, it is said to retain the

priority of the underlying water right. As explored in Section 6, this is somewhat problematic given that the underlying certificates are not explicit for MOU trust water but are for trust water from conservation projects. Given the WUA agreement to share water across certificates instead of imposing strict regulation by priority, it can be loosely assumed here that the WUA's share of MOU trust water is left instream and can be called in proportionate terms against WUA calls on water for diversion.

The question then is whether the existence of trust water under the MOU or from conservation projects might have (or should have) impacts on these agreements:

- The first case – that of the 156 cfs limit – serves to illuminate the relevant issues. The question is what would have happened if the total amount of water called on for diversion by the WUA (as adjusted for leasing) and the conserved water in trust exceeded 156 cfs. This is fairly straightforward. The WUA diversions would be filled, as would any instream portion that is the WUAs share of trust water. If filling the State's share of trust water exceeded the 156 cfs, then the State's call would not be filled. In effect, whatever water would have been instream without going through the effort to place the State's water in trust would have been left instream anyway. For the WUA share that is dedicated to instream use, this water is much like the leased water. It is dedicated to instream use but still part of the originating certificate, and thus, in future agreements should probably be recognized as additive to whatever instream flows are provided for under an agreement. In the case of the 156 cfs limit, the low (less than 10 cfs) allocations of conserved water to the WUA would not likely have affected compliance.

- For the 50/50 limit, compliance would have been an issue had the approximately 10 cfs of leased water been added to diversions. This suggests that if in addition to leased water, had the WUA share of conserved water in trust been added to diversions, there would probably have been additional periods when the MOU would have been called on to protect stream flow in the Dungeness River.

8. WUA Voluntary Effort to Leave 60 cfs in the River

In an informal agreement between the WUA and the Jamestown S'Klallam Tribe, subsequent to the signing of the MOU, the WUA also voluntarily suggested that they would at no time leave less than 60 cfs in the river. Presumably, the basis for this provision is the same as for the 50% limit on diversions specified in the MOU – that the 60 cfs should be measured as the amount at the USGS gage less that at each of the WUA diversions. Given the 50/50 agreement under the MOU, this implies that once flows drop below 120 cfs, the irrigators would need to lower their diversion to make up the difference in the stream. This type of approach is often called a "minimum flow agreement" in that it protects a minimum flow level in the river.

To assess how closely this voluntary effort was followed, an analysis similar to that for the 50/50 agreement was undertaken across the Ecology and WUA data set, with data adjusted and unadjusted for leasing. The results suggest that for unadjusted data there are no issues for the Ecology data set. In other words, the WUA have met their voluntary offer to date. If leases are added to the baseline expectation, then the WUA would have needed to have left more water instream from about August 21st onwards during lease years (for both Ecology and WUA data sets). This does not mean that effective stream flow below the last diversion was less than 60 cfs. On the contrary, stream flow would have been expected to be at 60 cfs or more (or at least that would be the measure based on the gage data and excluding any stream losses or gains). Instead, the issue is whether there should have been an expectation that the minimum stream flow – based purely on gage observations – should have been upped to 70 cfs from 60 cfs because Ecology had leased 10 cfs as an instream flow. This brief review simply serves to confirm that future efforts of this nature need to be explicit about how leased water is dealt with.

9. Superseding Certificates Analysis

The MOU calls for establishing permanent trust water certificates for the State's portion of conserved water in trust "at some point in the future when several years of record, not to exceed ten years in length, indicate there are no more significant water savings being gained through conservation measures." Under the terms of the MOU, the WUA share of conserved water in trust is also to be permanently certificated in trust once the place of use, number of acres to be irrigated and the schedule on which this might occur is known. There are other references in the MOU to the eventuality of also issuing superseding certificates for one or more of the irrigation districts and companies that make up the WUA. Given interest on the part of Ecology and the WUA in exploring the potential to have the WUA members apply for superseding certificates, the extensive information compiled for this report is used here to assess what likely parameters of such a certificate would be for WUA members.

As with any water right, the following attributes must be identified in an application for a superseding certificate (along with an assessment of the attributes as they exist on the current certificates and what Ecology has indicated it would require):

- Season of Use: Currently April 15 to September 15 under the court decree.
- Purpose of Use: Currently Irrigation, Domestic and Stockwater. Ecology indicates that it is likely that all the domestic use has been relinquished and, in any event, the WUA bylaws prohibit the use of water for domestic use (meaning drinking water), so that the domestic provision could be dropped.
- Point of diversion: Currently as listed on the certificates. Changes to the locations on the certificates would need to be provided.
- Place of Use: Currently not clear on the certificates. Ecology will require updated legal descriptions.
- Priority Date: Each certificate has its own priority date (see Table 1). Certificates with different dates could move to a single priority date – effectively acknowledging how the WUA customarily operates and allocates water. This would mean a senior certificate diminishing its right to a more junior priority date.
- Irrigated Acreage: Currently the certificates total about 25,908 acres. The MOU suggested a tentative limit of 7,000 acres in 1998. Ecology indicates that irrigated lands will need to be adjusted down to the maximum used in the last five years.
- Instantaneous rate (Qi): Currently the certificates total 518 cfs. The MOU suggested a tentative limit of 156 cfs. Ecology indicates that the Qi will need to be adjusted down to the maximum used in the last five years.
- Annual diverted quantity (Qa): This was not provided on the certificates. The MOU suggested a tentative limit of 29,250 acre-feet. Ecology will require this annual amount be based on the maximum used in the last five years.

The latter three items – acreage, Qi and Qa – are critical numbers in developing superseding certificates. Each of these can be developed and explored based on the data gathered. Acreage is relatively straightforward although there is limited data available. The analysis of diversions is not straightforward due to the fact that there are nine certificates, seven entities currently managing water, and five diversions. At their most disaggregated form, applications for superseding certificates would progress at the level of the nine certificates. As seen in the analysis below, WUA split data on the diversions does allow for disaggregating Qi and Qa by certificate. This is not fully possible with irrigated acreage, thus the WUA will need to work out these figures internally.

9.1 Irrigated Land

The full set of WUA and other records for irrigated land is repeated in Table 14. The only full dataset available during the 2005-2009 period is 2008, with a total of 6,286 acres recorded. This is an increase of around 400 acres over 2002 numbers. Districts and companies showing significant increases beyond the 2002 numbers include an increase of 172 acres for Highland ID, 118 acres for Clallam ID and 132 acres for Dungeness ID. The acreage figures include water used for agricultural, as well as residential purposes. Approximately 90% of the acreage is agricultural (see Table 15). The percentage in agriculture declined through 2002 but due to gaps in reporting more up to date figures are not available.

Table 14. Irrigated Acreage amongst current WUA members

Source	Year	WUA Totals	Agnew ID	Highland ID	Clallam Ditch Co.	Cline ID	Dung. Group	Sequim Prairie Tri	Dung. ID
MOU	1978-80&1987-89			average of 6,500 acres with maximum of 7,000					
USGS	1996-1997	5,130	1,190	620	410	460	710	1,330	410
WUA[1]	1996	5,927	1,538	980	453	475	704	1,342	435
WUA	1999	5,739	1,518	995	347	438	754	1,232	455
WUA	2000	5,766	1,556	995	392	438	662	1,268	455
WUA	2001	5,794	1,561	995	392	438	662	1,268	478
WUA	2002	5,871	1,561	995	392	438	691	1,316	478
WUA	2008	6,286	1,566	1,167	510	438	665	1,330	610
WUA	2009	[2]	1,566	1,167	585	448	610	1,330	[2]
WUA	2010	[2]	1,566	1,167	585	518	610	1,332	[2]

Notes: [1]From Montgomery Water Group (1999) GIS analysis based on WUA Data. A study by Eckert that occurred contemporaneously with the WUA/Montgomery effort found a lower total of 5,597 acres irrigated of which 955 were estimated to be in built or lawn-covered areas. [2]Dungeness ID numbers for 2009 and 2010 are not available so WUA totals are also not available.

Table 15. Breakdown of Irrigated Acreage by Type of Use

Source	Year	Totals (acres)	Agric. (acres)	Resident. (acres)	% in Agric.
DWUA	1996	5,927	5,400	527	91%
DWUA	1999	5,739	5,025	713	88%
DWUA	2000	5,766	4,981	785	86%
DWUA	2001	5,794	5,004	790	86%
DWUA	2002	5,871	5,131	740	87%
DWUA	2008	n/a	n/a	n/a	

9.2 Diversions: Irrigation Season

Detailed figures for Qi and Qa during the irrigation season were calculated for the 2005 to 2009 period. Data from the WUA on splits to different certificates on the Sequim Prairie, Highland and CCD diversions were used to derive proportional deliveries to the certificates. These split percentages are used to allocate water diverted (per Ecology gage data) to each of the nine certificates. A simple summary of the maximum Qi and Qa for the 2005-2009 is provided in Table 16. The table shows both period maximums and what the figures would be if the results for 2009 for the three certificates on the CCD

Diversion were used. Completion of the recent piping project there provides two distinct choices for maximum diversion figures for these certificates.

Table 16. Maximum Irrigation Season Qi and Qa, 2005-2009

		Diversion:	Agnew	Highland		Indep.	CCD			Prairie	
	WUA Totals	Certificate:	Agnew ID	Highland ID	Eureka	Indep.	Clallam Irr Co.	Cline ID	Dung. Irr Grp	Sequim P Ditch	Dung. ID
Maximum Instantaneous Diversion Qi (for each certificate)											
2005-2009	90.6		24.5	13.3	2.2	9.3	7.3	9.0	5.2	7.1	12.7
By Diversion			24.5	15.5		9.3		21.5		19.8	
2009*	85.3						4.2	5.0	7.0		
By Diversion								16.2			
Maximum Quantity Diverted Qa (for each certificate)											
By Certificate											
2005-2009	17,466		3,890	2,248	366	1,959	1,653	2,042	1,167	1,491	2,650
By Diversion			3,890	2,614		1,959		4,862		4,141	
2009*	15,755						819	977	1,355		
By Diversion								3,151			

Notes: 2009* is the 2009 figure for the CCD diversion (piped) plus that 2005-2009 figures for all other diversions

The table shows that if the period maximums are used, then the total requested in superseding certificates would be 90.6 cfs for Qi and 17,466 AF for Qa. Comparison with figures in Table 6 and the chart in Figure 2 show that the WUA members as a whole have not come close to this Qi diversion level in the last five years. The sum total for the WUA is so large because it is derived by choosing maximum levels for each diversion and then adding those together. As for Qa, the average annual diversion volume during the irrigation season has been about 15,600 AF, so the maximum of 17,466 AF provides considerable room for error. Again, Ecology will look at and approve diversion figures for superseding certificates based on the history at each diversion. Therefore, the totals might look large, but experience suggests they are unlikely to occur in practice.

9.3 Diversions: Stockwater

Districts and companies divert stock water on a variable basis throughout the winter and spring. On occasion, diversion levels approach those during the irrigation season but as a whole, the annual volume is much less. No winter split data is available and therefore the figures are presented in Table 17 by diversion rather than by certificate. Adding up the maximum Qa for each diversion suggests a maximum total annual water use of 4,616 AF outside of the irrigation season. This compares to the single season maximum for all diversions of 4,283 AF and the average over the period of 3,270 AF (though this is based only on three years of data given the absence of CCD data for 2007 and 2008). The reliability of the winter gage readings is questioned by the WUA as the gages are not monitored and maintained in the winter months. Indeed, missing data and seemingly nonsensical readings make aggregation of the data difficult. The figures cited here are therefore only approximate and may under represent the full extent of stockwater use.

Table 17. Maximum Stockwater Qi and Qa, 2005-2009

Diversion	Agnew	Highland		Indep.	CCD			Prairie	
WUA Totals	Agnew ID	Highland ID	Eureka	Indep.	Clallam Irr Co.	Cline ID	Dung. Irr Grp	Sequim P Ditch	Dung. ID
Max Diversion Qi									
2005-2009 45.5	8.3	14.0		6.9	6.9			9.4	
Max Annual Diversion Qa									
2005-2009 4,616	690	1,190		769	348			1,619	

10. Conclusions

This report compiles a diverse array of information from different sources, in order to describe and analyze the last ten years of irrigation operations of members of the Sequim-Dungeness Agricultural Water Users Association, which is comprised of seven management entities and nine certificates drawing water from five diversions on the Dungeness River. The WUA has worked in a collaborative fashion with Washington Department of Ecology, the Clallam Conservation District, the Jamestown S'Klallam Tribe, Clallam County, and other basin stakeholders for the last few decades to reduce their diversions in order to provide higher instream flows for a number of threatened salmonid species. Through compiling available data on irrigation diversions, it is suggested in this report that over the last 30 years, average diversions by WUA members have been cut in half from over 100 cfs to less than 50 cfs. Despite this remarkable progress, peak diversions for irrigation in late summer still impede quality fish habitat in the Dungeness River.

The 1998 MOU between the WUA and Ecology served as an instrument to reward the WUA for past conservation actions and as a tool to motivate future efforts. After almost 12 years of implementation of the MOU, this report presents an evaluation of various components of the MOU, as well as other water conservation and leasing efforts engaged in by the WUA. Generally, implementation of the MOU has been spotty on the part of both the WUA and Ecology. Compliance with diversion monitoring has been a bright spot on both sides, although continued state budget worries raise concerns for the long-term future of the Ecology gages. Reporting on these issues is also harder as the WUA has not always submitted its annual reports in a timely fashion and substantial data gaps exist, particularly with respect to irrigated lands. For its part, Ecology has largely failed to regularly process final orders for MOU trust water. In addition, hindsight suggests that the procedure set forth in the MOU by which reductions in water use under the MOU are placed instream only after a considerable time lag, and then can apparently rise or fall on a continual basis, has not proven a very useful approach. The MOU may have been based on the idea that at some point diversions would stop changing. However, this has not happened, nor will it necessarily do so going forward as there will always be continued pressures to decrease and increase diversions for some time to come.

Further, analysis in the report shows that a number of agreements (both in and outside the formal MOU) aimed at protecting stream flow levels in the late summer have required only occasional effort and minimal sacrifice by the WUA. The diversion reduction and minimum flow agreements required only occasional implementation of voluntary cutback measures by the WUA. Further, these provisions did not explicitly provide for the treatment of any leased water and conserved water produced under the State's Irrigation Efficiencies Grant Program. Water leasing by Ecology and implementation of conservation projects by the WUA, the Conservation District. and Ecology are key factors that have underpinned the continued reduction in WUA diversions, not the provisions of the MOU.

So what did the MOU accomplish? For one thing, it continued the spirit of collaboration in the Dungeness. Figures presented earlier suggest total water savings of 18.6 cfs since the MOU was signed. Further comparison of 2001-2004 and 2005-2009 diversions suggest that this figure includes a 9 cfs reduction from 2001-2009. The analysis suggests that expenditure by the State on irrigation efficiency projects produced about 11.2 cfs of this diversion while WUA financed efforts have produced an additional 7.4 cfs savings. These reductions have come from conservation projects, improved on-farm technology, and stricter management of water as irrigated acreage has remained constant or increased over the period. The cause and effect of benefits garnered under the MOU are at once hard to establish, but the reductions in water use and diversions are tangible nonetheless.

The question arises as to how to move forward. As outlined above, many elements of the MOU have proven of limited utility or have led to uncertainties between Ecology and the WUA in terms of their ultimate value. One way to move forward is to proceed to superseding certificates for the WUA members. To that end the information compiled here is deployed to suggest the parameters for the issuance of such certificates. In moving towards superseding certificates, many of the issues laid bare by this analysis should be discussed, debated, and resolved between Ecology and WUA. At this juncture the fate of the conserved water held in trust for the WUA must be resolved alongside the issuance of new certificates. As calculated here it appears that the WUA currently have 7.5 cfs in temporary trust and may be entitled to a total of 13.17 cfs based on diversion levels through 2009 and the MOU trust water calculation methodology.

Whether there is in fact a need for a new or revised MOU remains an open question given the WUA members increased familiarity with the standing tools of the Trust Water Rights Program including the use of the trust for conserved water and water leasing. In addition, the potential launching of a new groundwater mitigation program under the proposed Instream Flow Rule may argue for an organized program of investments and actions that might fall under a subsequent MOU, particularly if these avoid the complications inherent in the MOUs lagged trust water provisions.

References

Elwha-Dungeness Planning Unit. 2005. Elwha-Dungeness Watershed Plan: Water Resource Inventory Area 18 and Sequim Bay in West WRIA 17. Port Angeles, WA: Clallam County.

Montgomery Water Group. 1999. Dungeness River Agricultural Water Users Association Comprehensive Water Conservation Plan. Prepared for Washington State Department of Ecology.

Appendix A.1 Agnew Diversion; Agnew Irrigation District

Water Right Certificates

Certificate	#237	#1804	Totals
Name	Agnew ID	Agnew ID	
Priority Date	October 1, 1918	June 3, 1925	
Source	Dungeness River	MacDonald Creek	
Season	April 15 to September 15		
Rate (Qa in cfs)	146	5	146
Irrigated Acres	7300	250	7300

Irrigated Land: Historical Data

Source	Year	Totals (acres)	Agricultural (acres)	Lawn (acres)
USGS	1996&1997	1,190		
DWUA	1996	1,538	1,290	248
DWUA	1999	1,518	1,248	270
DWUA	2000	1,556	1,274	282
DWUA	2001	1,561	1,274	287
DWUA	2002	1,561	1,274	287
DWUA	2008	1,566	1,274	292
DWUA	2009	**1,566**	1,274	292
DWUA	2010	1,566	1,274	292

Diversion Data (2005 - 2009): Irrigation Season

Year	Max Rate Ecology Qi (cfs)	Average Rate Ecology Qi (cfs)	Diversion Volume Ecology Qa (AF)	Diversion Volume DWUA Qa (AF)
2005	18.6	10.8	3,890	3,318
2006	18.7	11.8	3,616	3,446
2007	18.5	11.3	3,463	3,261
2008	15.6	8.8	2,699	2,833
2009	24.5	12.7	3,890	3,048
Period				
Minimum	15.6	8.8	2,699	2,833
Maximim	**24.5**	12.7	**3,890**	**3,446**
Average		11.1	3,512	3,181

Maximum Diversion Rate (Qi)	Ecology Qi (cfs)		DWUA Qi (cfs)	
Maxi diversion (unadjusted):	24.5	7/28/2009	18.07	24/7/2007
Max diversion (adjusted for leasing):	24.5		18.07	

Diversion Data (2004/5 to 2008/9): Stockwater

Year	Max Rate Ecology Qi (cfs)	Diversion Volume Ecology Qa (AF)
2004/5	6.8	690
2005/6	7.2	561
2006/7	5.5	300
2007/8	8.3	402
2008/9	6.9	486
Period		
Minimum	5.5	300
Maximim	8.3	**690**
Average		488

Water Budget Estimates Irrigation Season

Allocation of Diverted Water to Consumption and Loss		**Source:**
A. Irrigation Season Consumptive Use (inches)	16.6	Washington Field Guide*
B. Irrigated Acreage	1,566	2005-2009 average (above)
C. Total Annual Consumptive Quantity (AF)	2,166	A * B
D. Average Diversion Volume (AF)	3,512	2005-2009 average (above)
E. Average Total Losses (AF)	1,346	D - C
Break out of Losses		
F. On-Farm Efficiency Assumed	80%	assumed for sprinklers
G. On-Farm Delivery Calculated (AF)	2,708	C * G
H. On-Farm Loss Calculated (AF)	542	H - C
I. Tailwater and Delivery Loss Derived (AF)	804	D - H
Derived Water Budget		
J. Tailwater and Delivery Loss (AF)	23%	I / D
K. On-Farm Loss	15%	H / D
L. Consumptive Quantity	62%	C / D

*Pasture/Turf Crop Irrigation Requirment of April 15 to September 15th

Appendix A.2 Highland Diversion; Highland Irrigation District

Water Right Certificates

Certificate	#235	#221	Totals
Name	Highland ID	Eureka I&M Co	
Priority Date	January 1, 1915	June 3, 1925	
Source	Dungeness River	Dungeness River	
Season	4/15 to 9/15	4/15 to 9/15	
Rate (Qa in cfs)	70.14	23.08	93.22
Irrigated Acres	3,507	1,154	4,661

Irrigated Land: Historical Data

Source	Year	Totals (acres)	Agricultural (acres)	Lawn (acres)
Highland ID				
USGS	1996&1997	620		
DWUA/Cons. Plan	1996	980	820	160
DWUA	1999	995	830	165
DWUA	2000	995	830	165
DWUA	2001	995	830	165
DWUA	2002	995	830	165
DWUA	2008	1,167	377	790
DWUA	2009	**1,167**	377	790
DWUA	2010	1,167	377	790
Eureka I&M Co.		(included with Sequim Prairie Tri Lands)		
USGS	1996&1997	300 acres for Eureka and Independent		
DWUA	2009	not yet provided		

Diversion Data: 2005 - 2009

Year	Max Rate Ecology Qi (cfs)	Average Rate Ecology Qi (cfs)	Diversion Volume Ecology Qa (AF)	Diversion Volume DWUA Qa (AF)
2005	11.6	7.2	2,517	2,118
2006	15.5	8.6	2,614	2,426
2007	13	8.5	2,603	2,348
2008	12.3	6.8	2,070	2,137
2009	14.2	8.2	2,517	2,385
Period				
Minimum	11.6	6.8	2,070	2,118
Maximim	**15.5**	8.6	**2,614**	**2,426**
Average		7.9	2,464	2,283

Maximum Rate (Qi)	Ecology (cfs)		DWUA (cfs)	
Maximum diversion (unadjusted):	15.5	5/16/2006	13.30	6/2/2009
Maximum diversion (adjusted for leasing):	15.5		13.30	

Diversion Splits (%and AF)	Highland	Eureka	Totals
Water Split Between Certificates			
2005-2009 Average Split Values	86%	14%	
Allocation of 5-Year ECY Maximums			
Instantaneous - Qi	**13.3**	**2.2**	15.50
Volume - Qa	**2,248**	**366**	2,614

Diversion Data (2004/5 to 2008/9): Stockwater

Year	Max Rate Ecology Qi (cfs)	Diversion Volume Ecology Qa (AF)
2004/5	6.9	1,190
2005/6	10.1	791
2006/7	9.6	709
2007/8	14	900
2008/9	4.6	593
Period		
Minimum	4.6	593
Maximim	14	**1,190**
Average		836

Water Budget Estimates

	Highland ID	Eureka*	Total
Water Split Between Districts			
Allocation of 5-Year ECY Average Volume Diverted	2,119	345	2,464

* For Eureka see Sequim Prairie Tri sheet

Allocation of Diverted Water to Consumption and Loss		**Source:**
A. Irrigation Season Consumptive Use (inches)	16	Washington Field Guide*
B. Irrigated Acreage	1,167	2005-2009 average (above)
C. Total Annual Consumptive Quantity (AF)	1,556	A * B
D. Average Diversion Volume (AF)	2,464	2005-2009 average (above)
E. Average Total Losses (AF)	908	D - C
Break out of Losses		
F. On-Farm Efficiency Assumed	80%	assumed for sprinklers
G. On-Farm Delivery Calculated (AF)	1,945	C * G
H. On-Farm Loss Calculated (AF)	389	H - C
I. Tailwater and Delivery Loss Derived (AF)	519	D - H
Derived Water Budget		
J. Tailwater and Delivery Loss (AF)	21%	I / D
K. On-Farm Loss	16%	H / D
L. Consumptive Quantity	63%	C / D

*Pasture/Turf Crop Irrigation Requirment of April 15 to September 15th

Appendix A.3 Independent Diversion: Independent Irrigation Company

Water Right Certificates

Certificate	#237
Name	Independent Irr. Co.
Priority Date	January 1, 1906
Source	Dungeness River
Season	4/15-9/15
Rate (Qa in cfs)	40
Irrigated Acres	2,000

Irrigated Land: Historical Data

Source	Year	Totals (acres)	Agricultural (acres)	Lawn (acres)
USGS (with Eureka)	1996&1997	300		
DWUA	various	(included with Sequim Prairie Tri)		

Diversion Data (2005 - 2009): Irrigation Season

Year	Max Rate Ecology Qi (cfs)	Average Rate Ecology Qi (cfs)	Diversion Volume Ecology Qa (AF)	Diversion Volume DWUA Qa (AF)
2005	7.3	4.5	1,511	1,413
2006	9.3	6.4	1,959	1,962
2007	6.6	5.1	1,543	1,568
2008	7.1	5.1	1,556	1,571
2009	7.4	4.9	1,511	1,547
Period				
Minimum	6.6	4.5	1,511	1,413
Maximim	**9.3**	6.4	**1,959**	**1,962**
Average		5.2	1,616	1,612

Maximum Rate (Qi)	Ecology (cfs)		DWUA (cfs)	
Maximum diversion (unadjusted):	9.3	5/16/2006	9.82	8/31/2006
Maximum diversion (adjusted for leasing):	9.3		9.82	

Diversion Data (2004/5 to 2008/9): Stockwater

Year	Max Rate Ecology Qi (cfs)	Diversion Volume Ecology Qa (AF)
2004/5	4.6	769
2005/6	5.4	334
2006/7	6.9	541
2007/8	2.5	26
2008/9	3.6	136
Period		
Minimum	2.5	26
Maximim	6.9	**769**
Average		361

Water Budget Estimates

(included with Sequim Prairie Tri)

Appendix A.4 CCD Diversion; Cline and Clallam Irrigation Districts and Dungeness Irrigation Group

Water Right Certificates

Certificate	#224	#238	#234	Totals
Name	Clallam Irr Co.	Cline ID	Dungeness Irr Group	
Priority Date	January 1, 1902	July 1, 1919	June 1, 1911	
Source	Dungeness River	Dungeness River	Dungeness River	
Season	4/15-9/15	4/15-9/15	4/15-9/15	
Rate (Qa in cfs)	60	46	70.94	176.94
Irrigated Acres	3,000	2300	3547	8,847

Irrigated Land: Historical Data

Source	Year	Totals (acres)	Agricultural (acres)	Lawn (acres)
Clallam Irr. Co.				
USGS	1996&1997	410		
DWUA/Cons. Plan	1996	453	430	23
DWUA	1999	347	343	3
DWUA	2000	392	343	49
DWUA	2001	392	343	49
DWUA	2002	392	343	49
DWUA	2008	510	n/a	n/a
DWUA	2009	**585**	n/a	n/a
DWUA	2010	585	n/a	n/a
Cline ID				
USGS	1996&1997	460		
DWUA/Cons. Plan	1996	475	450	25
DWUA	1999	438	413	25
DWUA	2000	438	413	25
DWUA	2001	438	413	25
DWUA	2002	438	413	25
DWUA	2008	438	413	25
DWUA	2009	**448**	413	35
DWUA	2010	518	483	35
Dungeness Irr. Grp.				
USGS	1996&1997	710		
DWUA/Cons. Plan	1996	704	700	4
DWUA	1999	754	750	4
DWUA	2000	662	653	9
DWUA	2001	662	653	9
DWUA	2002	691	677	14
DWUA	2008	**665**	631	34
DWUA	2009	610	610	-
DWUA	2010	610	610	-
Diversion Totals		1,521	1,433	88

Diversion Data (2005 - 2009): Irrigation Season

Year	Max Rate Ecology Qi (cfs)	Average Rate Ecology Qi (cfs)	Diversion Volume Ecology Qa (AF)	Diversion Volume DWUA Qa (AF)
2005	19.4	16.5	3,151	5,003
2006	21.5	15.9	4,863	4,860
2007				
2008				
2009	16.2	10.3	3,151	2,945
Period				
Minimum	16.2	10.3	3,151	2,945
Maximim	**21.5**	16.5	**4,863**	**5,003**
Average		14.3	3,721	4,269

*2007 and 2008 data from ECY excluded due to issues with diversion/gage during construction

Maximum Rate (Qi)	Ecology (cfs)		DWUA (cfs)	
Maximum diversion (unadjusted):	21.5	5/18/2006	19.40	5/31/2005
Maximum diversion (adjusted for leasing):	21.5		19.40	

	Clallam	Cline	Dungeness	Totals
Water Split Between Certificates				
Based on 2009 Water Year				
Split Value	26%	31%	43%	
Allocation of 5-Year ECY Maximums				
Instantaneous - Qi	4.2	5.0	6.97	16.20
Volume - Qa	819	977	1,355	3,151
Based on 2003-2006 Water Years				
Average of Split Values	34%	42%	24%	
Allocation of 5-Year ECY Maximums				
Instantaneous - Qi	7.3	9.0	5.16	21.50
Volume - Qa	1,653	2,042	1,167	4,863

Diversion Data (2004/5 to 2008/9): Stockwater

Year	Max Rate Ecology Qi (cfs)	Diversion Volume Ecology Qa (AF)
2004/5	6.5	14
2005/6	1.7	79
2006/7		
2007/8		
2008/9	6.9	348
Period		
Minimum	1.7	14
Maximim	6.9	348
Average		147

*2007 and 2008 data from ECY excluded due to issues with diversion/gage during construction

Water Budget Estimates Irrigation Season (2009)

	Clallam	Cline	Dungeness	Totals	Source:
Water Split Between Districts					
2009 Split Values (AF)	819	977	1,355	3,151	Split Qa volumes above
Allocation of Diverted Water to Consumption and Loss					
A. Irrigation Season Consumptive Use (inches)	16.6	16.6	16.6	16.6	Washington Field Guide*
B. Irrigated Acreage	585	448	610	1,643	2005-2009 average (above)
C. Total Annual Consumptive Quantity (AF)	809	620	844	2,273	A * B
D. Average Diversion Volume (AF)	819	977	1,355	3,151	2005-2009 average (above)
E. Average Total Losses (AF)	10	357	511	878	D - C
Break out of Losses					
F. On-Farm Efficiency Assumed	80%	80%	80%	80%	assumed for sprinklers
G. On-Farm Delivery Calculated (AF)	1,012	775	1,055	2,841	C * G
H. On-Farm Loss Calculated (AF)	202	155	211	568	H - C
I. Tailwater and Delivery Loss Derived (AF)	(192)	202	300	310	D - H
Derived Water Budget					
J. Tailwater and Delivery Loss (AF)	-23%	21%	22%	10%	I / D
K. On-Farm Loss	25%	16%	16%	18%	H / D
L. Consumptive Quantity	99%	63%	62%	72%	C / D

*Pasture/Turf Crop Irrigation Requirment of April 15 to September 15th

**Note split values for Clallam must be too low; however CCD Totals seem appropriate

Appendix A.5 Prairie Ditch Diversion; Sequim Prairie Tri (Sequim Prairie, Independent and Eureka) and Dungeness Irrigation District

Water Right Certificates

Certificate	#220	#239	Totals
Name	Sequim Prairie Ditch Co.	Dungeness ID	
Priority Date	November 1, 1895	June 3, 1925	
Source	Dungeness River	Dungeness River	
Season	4/15-9/15	4/15-9/16	
Rate (Qa in cfs)	20	42	62
Irrigated Acres	1,000	2100	3,100

Irrigated Land: Historical Data

Source	Year	Totals (acres)	Agricultural (acres)	Lawn (acres)
Sequim Prairie Ditch Co.				
USGS (with Eureka)	1996&1998	1,030		
DWUA	various	(included with Sequim Prairie Tri)		
DWUA	2009	not yet provided		
Sequim Prairie Tri (SPDC plus Eureka and Independent				
USGS	1996&1997	1,330		
DWUA/Cons. Plan	1996	1,342	1,290	52
DWUA	1999	1,232	1,001	231
DWUA	2000	1,268	1,028	240
DWUA	2001	1,268	1,028	240
DWUA	2002	1,316	1,131	185
DWUA	2008	1,330	1,042	288
DWUA	2009	**1,330**	1,042	288
DWUA	2010	1,332	1,046	286
Dungeness ID				
USGS	1996&1997	410		
DWUA	1996	435	420	15
DWUA	1999	455	440	15
DWUA	2000	455	440	15
DWUA	2001	478	463	15
DWUA	2002	478	463	15
DWUA	2008	610	n/a	n/a
DWUA	2009	n/a	n/a	n/a
DWUA	2010	n/a	n/a	n/a

Diversion Data (2005 - 2009): Irrigation Season

Year	Max Rate Ecology Qi (cfs)	Average Rate Ecology Qi (cfs)	Diversion Volume Ecology Qa (AF)	Diversion Volume DWUA Qa (AF)
2005	19.8	14.1	3,861	4,284
2006	18.9	13.6	4,140	3,924
2007	17.4	12.7	3,865	3,976
2008	17.9	11.0	3,347	3,380
2009	18.2	12.6	3,861	3,722
Period				
Minimum	17.4	11.0	3,347	3,380
Maximim	**19.8**	14.1	**4,140**	**4,284**
Average		12.8	3,815	3,857

Maximum Rate (Qi)	Ecology (cfs)		DWUA (cfs)	
Maximum diversion (unadjusted):	19.8	7/26/2005	19.87	7/25/2005
Maximum diversion (adjusted for leasing):	19.8		19.87	

Diversion Splits	Sequim Prairie Ditch Co	Dungeness ID	Totals
Water Split Between Certificates			
2005-2009 Average Split Values	36%	64%	
Allocation of 5-Year ECY Maximums			
Instantaneous - Qi	**7.1**	**12.7**	19.80
Volume - Qa	**1,491**	**2,650**	4,140

Diversion Data (2004/5 to 2008/9): Stockwater

Year	Max Rate Ecology Qi (cfs)	Diversion Volume Ecology Qa (AF)
2004/5	8.5	1,619
2005/6	5.9	652
2006/7	8.8	1,485
2007/8	7.6	1,360
2008/9	9.4	1,548
Period		
Minimum	5.9	652
Maximim	9.4	**1,619**
Average		1,333

Water Budget Estimates Irrigation Season

Water Split Between Districts	Sequim Prairie Ditch Co	Dungeness ID	Total
2005-2009 Average Split Values	36%	64%	100%
Allocation of 5-Year ECY Average Volume Diverted	1,373	2,441	2,464
Water Added from Eureka & Independent			
Eureka	363		
Indpendent	1,616		
Total Sequim Praire Tri Diversions	3,352		

Allocation of Diverted Water to Consumption and Loss			**Source:**
A. Irrigation Season Consumptive Use (inches)	16.6	16.6	Washington Field Guide*
B. Irrigated Acreage	1,330	610	2005-2009 average (above)
C. Total Annual Consumptive Quantity (AF	1,840	844	A * B
D. Average Diversion Volume (AF)	3,352	2,441	2005-2009 average (above)
E. Average Total Losses (AF)	1,512	1,598	D - C
Break out of Losses			
F. On-Farm Efficiency Assumed	80%	80%	assumed for sprinklers
G. On-Farm Delivery Calculated (AF)	2,300	1,055	C * G
H. On-Farm Loss Calculated (AF)	460	211	H - C
I. Tailwater and Delivery Loss Derived (AF)	1,053	1,387	D - H
Derived Water Budget			
J. Tailwater and Delivery Loss (AF)	31%	57%	I / D
K. On-Farm Loss	14%	9%	H / D
L. Consumptive Quantity	55%	35%	C / D

*Pasture/Turf Crop Irrigation Requirment of April 15 to September 15th

Appendix B. Conservation Project Information

District/Company	Project	Code	Pipe Length (ft)	District Cost	Water Saved (cfs)	Trust Water (cfs)	Trust Water (AF)	Completion Date	Funding Source
Agnew Irrigation District	Hooker Rd. Lateral	A-8	5,000	$ 14,969	0.21			Apr. 2002	WSCC IWQ
CCD	Combo Phase 4	CL-CCD-4	1,230	$ 420,000				Apr. 2008	BOR, SRFB
Clallam Ditch Company	Carlsborg Road Lateral	C-3	14,000	$ 227,741	0.40			Apr. 2002	IWQ
Clallam Ditch Company	Taylor Cutoff & Heath Rd. Lat	C-1, C-4	8,400	$ 131,371	0.48	0.410	125.00	May-04	IEP
Clallam Ditch Company	Combo Phase 1	C-CCD-1	13,000	$ 500,000	1.10	1.100	338.80	Dec. 2007	Ref. 38, CIDMP, EPA
Clallam Ditch Company	Combo Phase 3	C-CCD-3	3,708	$ 500,000	1.00	1.000	244.00	Dec. 2008	IEP, CIDMP
Cline Irrigation District	Clark Rd. Lateral	CL-13	4,300	$ 83,389	0.14			Oct. 2004	IWQ
Cline Irrigation District	Wheeler Rd Lat.	CL-3	2,600	$ 62,140	0.12	0.080	24.40	Apr. 2005	IEF, IWQ
Cline Irrigation District	Combo Phase 2	CL-CCD-2	15,700	$ 537,228	1.00	1.000	308.00	Aug. 2006	Ref. 38, DOE, etc
Cline Irrigation District	Combo Phase 1	Cl-CCD-1	30,000	$ 1,705,503	2.10	2.100	646.80	Dec. 2007	Ref. 38, DOE, etc
Cline Irrigation District	Combo Phase 5	CL-CCD-5	5,000	$ 380,000				Summer-08	SRFB 2
Dungeness Irrigation Group	Kitchen Dick Lateral	DC-5	7,100	$ 59,530	0.25			Apr. 2001	WSCC, IWQ
Dungeness Irrigation Group	Cameron Rd. Lateral	DC-7	5,360	$ 67,250	0.20	0.170	52.00	May 2004	IEP
Dungeness Irrigation Group	Main Canal to Matriotti	DC-M-4	5,500	$ 244,700	0.65	0.550	169.00	Jan. 2006	IEP
Dungeness Irrigation Group	Combo Phase 3	DC-CCD-3	12,583	$ 648,282	0.80	0.800	244.00	May-07	IEP, CIDMP
Dungeness Irrigation Group	Carlsborg Lateral	DC-1	6,500	n/a	0.57			Apr. 2000	JKT-SRFB
Highland Irrigation District	Smith Ditch to Myco Site	H-15	3,000	$ 44,417	0.03			Aug. 2006	EQIP, Pioneers
Dungeness Irrigation District	D. Howat, Drip System	DID-DH		$ 10,200	0.04	0.035	10.67	Mar. 2007	IEP
Dungeness Irrigation District	DID Cameron Phase	DID-CP	3,700	$ 242,337	0.10	0.100	31.00	Apr. 2009	IEP, JSK, EQIP
Dungeness Irrigation District	Headgate to Split	DID-M3-1	2,370	$ 514,453	0.80			Apr. 2010	SRFB
Dungeness Irrig Dist/SPTIA	Split to Hendrickson	DID-M3-2	3,500	$ 478,195	2.00	1.400	462.00	Apr. 2010	IEP, SRFB, DOE
Sequim Prairie Tri-Irrigation	Port Williams Reservoir #1	SP-Res1	18,680	$ 321,043	1.75	0.970	297.00	Jan. 2006	IEP
Sequim Prairie Tri-Irrigation	Port Williams Reservoir #2	SP-Res2		$ 164,953	1.00	0.250	75.70	Jan. 2006	IEP
Sequim Prairie Tri-Irrigation	Priest/Hendrickson Lateral	SP-1, SP-2	6,690	$ 242,701	0.46	0.300	91.47	Aug. 2006	IEP, Pioneers
Sequim Prairie Tri-Irrigation	SVF Low Pressue Boom	SP-SVF		$ 95,514	0.35	0.300	88.80	Jul. 2004	IEP, EQIP
Totals			177,921	$ 7,695,918	15.55	10.565	3,208.64		

Questions from Karen Terwilliger for Senator Hargrove

2. **IFIM – where are there judgment calls in application of the IFIM model and decisions on specific instream flow values?**
    - **Regarding the IFIM model** - The IFIM model has several places where it is important to have knowledgeable fish biologists experienced in using the IFIM model make judgment calls such as: 1) what instream flow model should be used (1-flow, 2-flow, or 3-flow based on time, money, and staff constraints), 2) will the computer model be capable of answering the specific flow management questions being asked, 3) what specific flows and how many different flows need to measured to be able to answer questions about the range of flows you likely will want answers about, 4) is the calibration of the hydraulic model adequate, 5) can fish preference curves be created from the fish in the river otherwise what default fish preference curves will be used in the model, 6) and do the final fish habitat versus flow curves make sense based on fish biologists' knowledge of fish and streamflow in the river.
    - **Regarding decisions on specific instream flow values** – The instream flow numbers for the Dungeness River were primarily based on reviewing the streamflows that have occurred in the river and on the IFIM model results of how fish habitat changes with streamflow for the different fish species and lifestages for the 2 different reaches in the lower river. Typically for a given month the different fish habitat requirements for each salmon and trout species and lifestages were compared against each other and then against the desired fish habitat streamflows in the 2 different IFIM sites and then compared against the range of streamflow that has historically passed down the river at each site. This process was fully documented in the following 2 documents:

Wampler, Phillip and Joseph Hiss. 1991. *Fish Habitat Analysis for the Dungeness River Using the Instream Flow Incremental Methodology.* USDI Fish & Wildlife Service Western Washington Fishery Resource Office, Olympia.

Hiss, Joseph. 1993a. *Instream Flow Recommendations for Dungeness-Quilcene Area Salmon and Steelhead Streams.* USDI Fish & Wildlife Service Western Washington Fishery Resource Office, Olympia. DQ Project Study.

The 2 references are available at: http://www.fws.gov/wafwo/fisheries/wwfish_pub4.html. The US Fish and Wildlife IFIM study was agreed to by all on the Dungeness River Management Team as a way to resolve disputes over how much water the fish need between the irrigators and Tribes and state and federal natural resource agencies. It took 4 years to do and write a report on the IFIM study and 2 more years of numerous meetings by all the parties involved to reach agreement on the instream flows needed to protect and preserve the fish habitat in the Dungeness River.

ORPC EXHIBIT 2

The judgment calls in the IFIM model and the recommended instream flows were made by the following knowledgeable biologists and engineers who helped design the IFIM study, review the field collection of data and calibration of the computer model, and interpret the IFIM results in 1993:

Washington Department of Wildlife: Hal Beecher, Ph.D. and Tim Rymer
National Marine Fisheries Service: Brian Winter, PhD.
Washington Department of Fisheries: Ken Bates and Randy Johnson
Washington Department of Ecology: Brad Caldwell, M.S.
U.S. Geological Survey: Tom Higgins, Norm Dion, and Charles H. Swift III
U.S. Forest Service: Mike Donald
Point-No-Point Treaty Council: Carol Bernthal
Port Gamble S'Klallam Tribe: Peter Bahls
Jamestown S'Klallam Tribe: Mike Reed
U.S. Fish and Wildlife Service: Philip Wampler and Joseph Hiss

All of the scientists and their organizations above approved the Dungeness River IFIM model and the proposed instream flows as being scientifically valid and correct after years of review.

As years went by there were questions as to whether the model fully represented the lower river side channels and whether the side channels and their fish habitat were protected by the proposed instream flows. A study of the side channels and the mainstem flow and connectivity was done by Bureau of Reclamation in 2003:
Daraio, J.A., J.A. Bountry and T.J. Randle. 2003. Dungeness River instream flow side channel study. Report prepared for: State of Washington Department of Ecology and Clallam County by the U.S. Department of Interior, Technical Service Center, Bureau of Reclamation, Denver, CO. in cooperation with the Jamestown S'Klallam Tribe. 44p. plus Attachments. February 2003.
It is available at:
http://www.clallam.net/environment/assets/applets/Reclamation_Dungeness_River_Side_Channel_Report.pdf

The side channel study found the side channels were connected at the proposed instream flows and a following analysis by Ron Campbell found the side channel habitat was protected by the instream flows.

The proposed instream flows the Dungeness River were formally voted on by the parties involved in the Watershed Planning Process and approved in 2005:
Elwha-Dungeness Planning Unit. May 2005. Elwha-Dungeness Watershed Plan, Water Resource Inventory Area 18 (WRIA 18) and Sequim Bay in West WRIA 17. Published by Clallam County. Volume 1: Chapters 1-3 and 15 appendices; Volume 2: Appendix 3-E.
This can be found at: http://www.clallam.net/environment/html/wria_18_draft_watershed_plan.htm

The following organizations formally approved the Dungeness River instream flows.

By the Elwha-Dungeness Planning Unit:

Dungeness River Management Team (DRMT)
Elwha-Morse Management Team (EMMT)

Elwha-Dungeness Initiating Governments:

Clallam County (Lead Agency)
City of Port Angeles
Elwha Klallam Tribe
Jamestown S'Klallam Tribe
Agnew Irrigation District
Washington Department of Ecology

MAY 2005

The Clallam County Commissioners, Michael C. Chapman, Howard Doherty Jr., and Stephen Tharinger, formally voted on and approved a resolution supporting the Watershed Plan and the Dungeness River instream flows in June, 2005.

Elwha-Dungeness Watershed Plan
PLANNING UNIT APPROVAL

By signing these pages, members of the Elwha-Dungeness (WRIA 18) Planning Unit signifies the approval by himself, herself, or on behalf of his or her organization, as noted, of the Elwha-Dungeness Watershed Plan on this 16th day of April, 2004.

Name	Affiliation
N. H. Blenderman	Sport Fisheries
John E. Bittel	City of Sequim
[illegible]	Olympic National Forest
[illegible] Moore	Riverside Property owner
[illegible]	Protect the Peninsula's Future
[illegible]	DRMT
[illegible]	Dungeness Water Users Association
[illegible]	Riverside Property owners
[illegible]	Port Townsend
[illegible]	Clallam Conservation District
[illegible] (Chairman)	Lower Elwha Klallam Tribe
[illegible]	City of Port Angeles
[illegible] Collins	City of Port Angeles
[illegible]	Environmental Caucus
[illegible]	Interested Individual
Shawn A. Hines	Jamestown S'Klallam Tribe
[illegible]	Department of Ecology
Andy Brastad	Clallam County
[illegible]	Clallam County
[illegible]	Lower Elwha Klallam Tribe
[illegible]	Clallam County

The instream flows proposed for the Dungeness River were created by some of the most knowledgeable fish biologists in Washington and top IFIM experts in the country. The instream flows have withstood the test of time over the last 17 years after numerous critical reviews and were found to be valid and correct. The proposed Dungeness River instream flows were approved by all the state and federal agencies, Tribes, cities, county, environmental groups, irrigators, conservation district, and individual private property owners listed above.

Since the Washington Department of Ecology agreed to the Watershed Plan and the Dungeness River instream flows in the Plan, Ecology is obligated to adopt an instream flow rule with the instream flows in the Plan.

Changing the assumptions in the IFIM model and proposed instream flow numbers would require changing the minds of all the groups listed above who approved the instream flows.

5. Response to key points in Dr. Crittenden's letter

In summary, Dr. Crittenden found the IFIM model and the Toe-width model for the Dungeness Basin to be invalid. But after reviewing the models with experts on each model Ecology found Dr. Crittenden had made numerous incorrect assumptions about each of the models and that Dr. Crittenden's conclusions about the models were found to be scientifically and legally invalid.

Regarding Dr. Crittenden's objection to Ecology using "optimum" flows results from the IFIM and Toe-width models to set instream flows: Ecology's derives much of its instream flow setting authority and guidance from these laws:

> The Minimum Water Flows and Levels Act (1969) permits Ecology to establish minimum flows or levels on stream and lakes by regulation for the purpose of protecting fish, game, birds or other wildlife, recreational or aesthetic values or water quality (RCW 90.22.010). The Water Resources Act of 1971 provides that the quality of the natural environment shall be protected and, where possible enhanced through the retention of base flows for preservation of wildlife, fish, scenic, aesthetic, and other environmental values, and navigation values (RCW 90.54.020(3)).
>
> The statutory objective of setting minimum or base flows is the protection and preservation of instream values. The courts have found RCW 90.54 to require an antidegradation level of protection.

Ecology regards the minimum permissible flow consistent with legislative intent as the lowest flow capable of protecting and preserving and where possible enhancing instream values.

The question of "minimum" as contrasted with "optimum" flows has been considered by the State Supreme Court. The State Supreme Court found that using IFIM "optimum" flow numbers was the correct method to set a minimum instream flow under RCW 90.54. The method employed by Ecology and the Department of Fish and Wildlife to establish instream flows was affirmed by the State Supreme Court in Supreme Court of Washington, En Banc.; STATE of Washington, DEPARTMENT OF ECOLOGY, Department of Fisheries and Department of Wildlife, Respondents, v. PUD NO. 1 OF JEFFERSON COUNTY and City of Tacoma, Department of Public Utilities, Appellants. No. 58272-6. April 1, 1993. The state instream flow experts who determined the instream flows in the Dosewallips River case above were also the same state experts who determined instream flows in the Dungeness River using the same method.

The Supreme Court in the Elkhorn case said an "optimum" flow is only optimum in the artificial sense that the computer model said the habitat was "optimum" but that any model is a very simplified version of the real world. There are other factors that kill fish beside a lack of depth, velocity, substrate or cover. The Court understood that more flow in summer would make more salmon because the model does not include the effect of predation by birds, or lack of velocity to move insect drift for food, or the effect of competition between juveniles - all of which decrease fish mortality the higher the flow.

Dr. Crittenden said the instream flows are intended to enhance and restore the fish population but that cannot be done with an instream flow because the instream flow cannot affect existing water rights. The existing water rights for the Dungeness River in summer far exceed the natural flow in the river. No one with an existing water right has to put water back in the stream to meet the new instream flow. In the Dungeness River there are water rights certificates and permits for irrigators to take over 340 cfs out of the river in the summer when the median flow is only 270 cfs in August and 180 cfs in September. Setting an instream flow will give the fish a water right but that right will be junior to all other existing water rights so under state law the irrigators will still be entitled to dry up the Dungeness River even with an instream flow set in rule.

Since the existing water rights in the Dungeness River far exceed the summer natural flow, setting an instream flow and closing the basin to new rights really only provides protection to the existing private property owners with water rights rather than to the fish. The existing private property owners receive protection from Ecology issuing new water right permits to new landowners who would take water from river upstream of the existing

irrigators. The state's instream flow rule cannot protect the fish from being dried up by existing water rights.

Dr. Crittenden said there are no studies showing that maximizing freshwater habitat will increase salmon abundance. Ecology has found correlations relating low summer streamflow for juvenile coho to the numbers of returning adult coho two years later have been reported in the literature here in Washington since the 1940's.

Studies found that the higher the 30- or 60-day low summer flow the higher the number of returning adult coho salmon years later. Mathews and Olson, 1980 found that the relationship of more summer flow for coho juveniles equaling more returning adults 2 years later still holds strong as did Neave 1949, McKernan et al 1950, Wickett 1951, Smoker 1955, Lister and Walker 1966, Pearson et al 1967. This relationship was reaffirmed in Hartman and Scrivener 1990, and Quinn and Peterson 1996. The summer low flow is still used today by Washington Department of Fish and Wildlife to predict the number of returning coho adults in Puget Sound 2 years later as described in Zillges 1977.

Seiler (2001) used the Zillges 1977 document (Tech. Memo 28, WDFW) to estimate wild coho smolt production. Zillges 1977 contained estimates of the amount of coho juvenile habitat at summer low flow by using the 60 consecutive day low flow. The flow was averaged over 12 years was called the Puget Sound Summer Low Flow Index (PSSLFI).

When Seiler mapped coho smolt production versus PSSLFI for Puget Sound streams he found a strong positive correlation between the previous summer's flow and the population of smolts the following spring. On Bingham Creek, Seiler stated: "for this low gradient stream, the relationship between smolt production and flow the previous summer is clear: production is a positive and proportional function of flow – water equals fish" (p 14).

It is surprising that the correlation of more summer flow equals more adult coho salmon 2 years later would be so strong since fish habitat is only one of many factors that kill fish (such as ocean survival, fish harvest, disease, winter floods, etc).

This relationship between low streamflow and salmonid survival has also been shown for steelhead. In the Green River in 1979, Dr. Hal Beecher (WDFW) found the higher the low summer flow the higher the number of returning wild steelhead adults 2.5 years later. For low summer flow he used the lowest daily flow recorded during the summer.

- **Dr. Crittenden said Swift's Toe-width method was invalid because the rivers and the study sites were not randomly selected and USGS showed no statistical significance for their method.** The creation of the USGS Toe-width method is well documented with 2 references on Ecology's website: Preferred stream discharges for Salmon Spawning and Rearing in Washington State and Preferred stream discharges for Steelhead Spawning and Rearing in Washington State

The Toe-width method is a quick fish habitat assessment tool. The measurement from the toe of one stream bank to the toe of the other is put into an equation and an estimate of the flows needed for salmon and steelhead spawning and rearing is determined. Most of the over 250 instream flows set by rule in Washington were done with Toe-width. The method was created by USGS and the Department of Fisheries at the request of the Washington State legislature for the purpose of setting instream flows on Washington's 40,000 streams after they passed the Water Resources Act of 1971. The Washington legislature provided well over $1,000,000 to USGS from 1971 to 1979 to find a valid, scientific method so instream flows could be set for all of Washington using a reasonable amount of time and money.

Dr. Crittenden makes the assumption that salmon and steelhead spawn in areas chosen at random but that is not their distribution. Salmon and steelhead choose their spawning locations very carefully based on specific requirements that are not randomly distributed throughout the river. So it would be incorrect to randomly select rivers and study sites since the spawning distribution of salmonids is not random. USGS specifically chose their study sites to be representative of the actual spawning areas used by salmon and steelhead on 28 streams and rivers. They did an incredible amount of field work by measuring 84 different study sites with 4 transects at each site. Then they measured the depths and velocities at 10 different streamflows at each of the 336 transects or 3360 total transects measured.

Additionally, there are many pages in the USGS references listed above where they detail the statistical methods and the statistics calculated. I believe he missed these pages. For instance, many of these statistics can be found in the Steelhead Spawning and Rearing reference listed above specifically on pages 1, 2, 3 8, 11, 37 to 41, and 44 to 49 where you will find the standard error for steelhead spawning using Toe-width is 28 and 20 for steelhead rearing. These are both less than one standard deviation. In addition, the correlations coefficients are 0.95 and 0.96 respectively. These are excellent. On page 39 you will find USGS details their two-way analysis of variance on reaches and streams showing the dependent parameters, the sources of variance, the degrees of freedom, the computed "F" statistics of computed value and distribution value, along with notes that all testing was done at the 95% confidence interval. Clearly, Dr. Crittenden was mistaken is saying USGS provided no statistical significance on the Toe-width method.

Dr. Crittenden said Swift's Toe-width method was invalid because the smallest rivers measured were the Samish and Dosewallips River so the method is not valid for small streams. Once again it appears Dr. Crittenden missed many pages in the Toe-width documents. On page 27, Table 8, of the Salmon Spawning and Rearing document you will find the width of the 28 streams and rivers. Note that the width of the Dosewallips River is 105 to 123 feet. You will find that 18 of the 28 measured rivers were smaller than the Dosewallips – the Dosewallips River was actually one of the biggest rivers measured – not the smallest.

The Samish River was 30 to 52 feet wide and was much bigger than some of the other streams measured. The North Nemah River was 24 to 45 feet wide, Issaquah Creek was 31 to 42 feet, Smith Creek was 15 feet wide, and Bear Creek was 11 to 16 feet wide. Clearly, Dr. Crittenden was mistaken in

saying no small streams were included in derivation of the Toe-width method and in his characterization of the Samish and Dosewallips Rivers.

Dr. Crittenden said Swift's Toe-width method was invalid because the standard errors for the equations for salmon spawning and rearing are less than 2 standard deviations and that is too high to be acceptable to him. The standard errors for salmon are higher than for steelhead, but that does not make them unacceptable. USGS noted in Salmon Spawning and Rearing that "two-thirds of the solutions to the equations are expected to be within one standard error of the correct value...". Whereas these standard errors may be unacceptable to Dr. Crittenden he does not provide any alternative to this quick and inexpensive fish habitat assessment tool. It was created for the purpose of providing instream flows results for Washington's 40,000 streams. It would be nice to do an IFIM study on every stream, but at a cost of $50,000 to $100,000 per stream and a one or two year effort to calibrate the model and write a report it clearly is far beyond the means of the legislature to do a state-of-the-art fish habitat assessment method such as IFIM on every stream.

Dr. Crittenden said Swift's Toe-width method was invalid because Ecology collected Toe-widths at road crossings which constrain streams. It is true that road crossings typically constrain the stream's width but it is not true that the Toe-width measurements were taken at the narrower road crossings. Ecology went to great effort to hike upstream and downstream far enough to make sure we were beyond the constraining influence of a road culvert and that our transects were representative of the fish habitat. The road crossings were our access points and not the exact location were transects were measured. Once again, the transects were not placed randomly because that would result in inaccurate Toe-width measurements since salmon and steelhead do not spawn in random locations. It is very important to collect the Toe-width measurements at the locations where fish would spawn which is typically at the tails of pools over spawning size gravels. Placing even hundreds of transects randomly throughout the stream would provide no information at all about the width of the location where salmon and steelhead spawn and the streamflow needed to produce the needed depths and velocities. Placing hundreds of transects randomly in a stream would likely result in the ability to calculate the average width of the stream but the data would be useless for a Toe-width calculation.

Dr. Crittenden said IFIM allows individuals to obtain any flow they desire. That is incorrect. The hydraulic model within IFIM such as PHABSIM produces a very accurate prediction of depths and velocities over substrate and cover within the range allowed by the range of streamflows measured. The measured velocities are compared to the predicted velocities and the model is calibrated to a high degree of accuracy. There are indicators within the model such as Velocity Adjustment Factors (VAF) in which velocities are calculated using different methods and if they do not match the VAFs will not be within an acceptable level of accuracy. If even a single measured velocity on a transect is off it can trigger alarms within the model.

The hydraulic model's depths, velocities, and substrates are then matched against the depths, velocities, and substrates required by each species and lifestage such as spawning and juvenile. The final result is a fish habitat versus streamflow table for each species and lifestage that shows how much fish habitat in

square feet is gained or lost for each increment of streamflow. This involves giving priority to certain species and lifestages. There is no such thing as an "optimum" flow since you always have multiple species and lifestages in the river simultaneously; there have to be judgment decisions on whether the priority for a given month is spawning steelhead versus salmon juveniles. This decision-making is done by the most knowledgeable fish biologists from the state and federal agencies and Tribes. The result is a flow regime that protects and preserves the fish and fish habitat. The flow regime is neither pre-ordained nor arbitrary. Brad Caldwell, Ecology's designated instream flow expert, has testified as Ecology's expert on instream flows and fish habitat in many court cases over the last 25 years over how has determined instream flows. He has never lost in court because he has never been arbitrary in determining instream flows; he has always been found to be scientifically correct.

Dr. Crittenden said Ecology had instructed their employees to obtain estimates maximizing the flow. This sentence of his and the following one doesn't actually make sense, but I think he is trying to say something akin to Ecology used "optimum" flows for an instream flow and that this is a "taking" under the Constitution since it would cause restoration of fish. There are several misconceptions in his statements. One is the idea that setting an instream flow could somehow be a "taking" and would cause restoration of fish. Since an instream flow cannot affect existing water rights, an instream flow cannot take any water from anyone and therefore cannot restore flow or fish to the stream.

Dr. Crittenden said IFIM does not model bed-load movement and that could change in the long-term. It is true that the IFIM model does not include bed-load movement. What he is asking for cannot be done. Predicting the exact depths and velocities due to a large flood on a specific day say 20, 50 years from now would require a bed profile model that does not exist and that no one is capable of creating. To begin, you would have to be able to predict the exact weather at exact locations on a daily basis decades into the future so you could say what day the river channel will change and the exact peak and duration of the flood and every changed depth and velocity at increments of around one foot in the river. I know that scientists have a hard time predicting the weather more than one or two days ahead and even then there are large errors. I know that prediction of daily weather decades in the future is not possible and therefore it is not possible to predict exact bed profile changes decades into the future.

Dr. Crittenden said the IFIM sites were not randomly chosen but were selected to be representative of the river but are not. He said one site was narrow and diked and instead should have been a single channel. Dr. Crittenden is incorrect about the narrow, diked IFIM site not being a single channel. The site is a single channel. See page 15 in:

Wampler, Phillip and Joseph Hiss. 1991. *Fish Habitat Analysis for the Dungeness River Using the Instream Flow Incremental Methodology.* USDI Fish & Wildlife Service Western Washington Fishery Resource Office, Olympia.
Available at: http://www.fws.gov/wafwo/fisheries/wwfish_pub4.html

Because salmon and steelhead adults and juveniles use specific types of fish habitat when the fish biologists wanted to model the habitat in the lower 11 miles of the Dungeness River they picked IFIM sites to be representative of the types of habitat in the lower river. Placing transects randomly in the lower river would not produce any useful information on the fish habitat because you would not know if steelhead spawning habitat over large gravel, and small cobbles in the tails of pools was covered by a transect and was not over or under represented, or if the small side channels and side coves with rootwads were covered by a transect to include coho juvenile habitat in the correct proportion in the river, etc. etc.

Instead the experienced and knowledgeable fish biologists from the state and federal agencies and the Tribes met and selected reaches of the river with distinctive characteristics and then later selected representative study sites within those reaches. Then on April 12, 1988 the Dungeness River instream flow technical group consisting of specialists from Washington Department of Fisheries and Ecology and Fish and Wildlife Service decided to representative sites within 2 distinct and valuable fish habitat reaches: river mile 1.8 to 2.5 and river mile 3.3 to 6.4. On April 25, 1988 the technical group walked the river from river mile 1.8 to 6.4 to confirm the distinguishing characteristics of the 2 locations and select locations study sites within each reach. They found river mile 4.2 would adequately represent the river from river mile 3.3 to 6.4 consisting of moderate stream bed gradient and frequent channel braiding. They found river mile 2.3 would adequately represent the river from river mile 1.8 to 2.5 characterized by a lower gradient and single channel. Later that month transects were picked to represent the range of habitat and hydraulic variations present.

Dr. Crittenden may not feel the IFIM sites were representative of the lower Dungeness River but the fish biologists from the state and federal natural resource agencies and Tribes with the most knowledge of the characteristics of the river and its use by salmon and steelhead disagree with his assumption.

OFFICE OF THE ATTORNEY GENERAL

Inter-office Correspondence

Date: February 20, 1986

To: Eugene F. Wallace, Program Manager for Water Resources, Department of Ecology

From: Charles B. Roe, Senior Assistant Attorney General CBRoe

Subject: Instream Flow Statutes - Chapters 90.22 and 90.54 RCW

You have requested my views as to the meaning of the state's instream flow statutes contained in chapter 90.22 RCW and RCW 90.54.020. This is my response.

Chapter 90.22 RCW, enacted initially in 1967 and re-enacted in 1969, authorizes the establishment by the Department of Water Resources (now the Department of Ecology) of minimum water flows or levels for lakes and streams. A portion of that chapter, RCW 90.22.010, provides:

> The department of water resources may establish minimum water flows or levels for streams, lakes or other public waters for the purposes of protecting fish, game, birds or other wildlife resources, or recreational or aesthetic values of said public waters whenever it appears to be in the public interest to establish the same. In addition, the department of water resources shall, when requested by the department of fisheries or game commission to protect fish, game or other wildlife resources under the jurisdiction of the requesting state agency, or by the water pollution control commission to preserve water quality, establish such minimum flows or levels as are required to protect the resource or preserve the water quality described in the request. Any request submitted by the department of fisheries, game commission or water pollution control commission shall include a statement setting forth the need for establishing a minimum flow or level. This section shall not apply to waters artificially stored in reservoirs, provided that in the granting of storage permits by the department of water

ORPC EXHIBIT 3

> resources in the future, full recognition shall be given to downstream minimum flows, if any there may be, which have theretofore been established hereunder. (Emphasis supplied.)

RCW 90.54.020, enacted in 1971, sets forth a comprehensive list of state policy "fundamentals" for utilization and management of the state's waters. Of special relevance to this discussion is the "fundamental" contained in RCW 90.54.020 (3)(a) which reads:

> (3) The quality of the natural environment shall be protected and, where possible, enhanced as follows:
> (a) Perennial rivers and streams of the state shall be retained with base flows necessary to provide for preservation of wildlife, fish, scenic, aesthetic and other environmental values, and navigational values. Lakes and ponds shall be retained substantially in their natural condition. Withdrawals of water which would conflict therewith shall be authorized only in those situations where it is clear that overriding considerations of the public interest will be served. (Emphasis supplied.)

In addition, RCW 90.54.020 contains another "fundamental" for water management, the importance of which cannot be overstated for purposes of this discussion. It provides in RCW 90.54.020(2):

> Allocation of waters among potential uses and users shall be based generally on the securing of maximum net benefits for the people of the state. Maximum net benefits shall constitute total benefits less costs including opportunities lost.

The responsibility for implementing the above program and policy is vested primarily in the Department of Ecology, RCW 90.54.040. See generally Stempel v. Department of Water Resources, 82 Wn.2d 109, 117, 508 P.2d 166 (1973). Indeed, as to the establishment of minimum flows under state law, the authority to establish such flows is, by express "affirmation," vested exclusively in the Department of Ecology by RCW 90.03.247. Other state agencies are, by said section, not authorized to establish such flows.

Your inquiry relates primarily to the flows and levels that are provided by the aforequoted legislative enactments of 1969 and 1971.

I. CONCLUSION-SUMMARY

Existing state instream flow laws, contained in the aforenoted legislation, announce a very strong policy of retaining waters in naturally flowing streams of the state. The amount of water flow to be retained for a particular specific stream, or a reach thereof, will vary. These amounts are to be determined through a two-phase evaluation process by the Department of Ecology as set forth primarily in chapter 90.22 RCW and in RCW 90.54.020(2) and (3).

RCW 90.22.020 and RCW 90.54.030(3), which embody the first phase evaluation, provide for the establishment by the Department of Ecology of minimum or base flows to ensure that instream values of a stream, such as aesthetics, fisheries, or recreational values, are protected against termination from lack of water because of future appropriations, i.e., direct diversions from the stream itself. Stated simply, the basic policy of this phase is to keep all streams currently "alive" in that condition. It is not, however, a policy designed to retain flows that are greater than necessary to ensure the continued existence of the instream values associated with the stream on a minimum basis.

The second phase of instream flow retention policy is contained in RCW 90.54.020(2). That section sets forth a "maximum net benefit" test for allocation of future water uses. Under this test, a higher instream flow is required if it is determined by the department that instream values bring about the "maximum net benefit" usage of the waters of the stream. Thus, under appropriate findings derived from a maximum net benefit evaluation of a stream, the department shall require that all or a portion of the naturally occurring waters of stream be retained therein for all or portions of each year.

In sum, the policy of Washington instream flow protection laws today are:

1. To keep streams flowing for protection of instream values through the establishment of "minimum" flows that assure no streams with such instream values are authorized to be dried up in the future; and

2. To provide for instream flows above the "minimum" when such flows provide the people of the state the maximum net benefit return of the use of the state's public waters.

In order to understand the basis for my conclusions, it is necessary to know of the historical events, including the pertinent legislative history, underlying the enactment of chapters 90.22[1] and 90.54 RCW.[2]

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1 As to both the 1967 and 1969 versions of chapter 90.22 RCW, please note that writer hereof was not only the drafter thereof but, along with Senator (then Representative) Alan Thompson the legislation's prime sponsor, was the chief proponent for their enactment during their successful legislative journeys. This proponent activity was performed on behalf of both the Department of Water Resources and the Attorney General's Office. Of import to this paper, a major element of this activity was to describe the objectives of the bill and the meaning of legislation's various sections to the pertinent legislative committees.

2 The writer hereof was also the principal drafter as well as the executive branch proponent for enactment of chapter 90.54 RCW during the 1971 legislative session. This activity was conducted on behalf of Governor Daniel J. Evans, the Department of Ecology (Director John A. Biggs), and the Attorney General's Office (Attorney General Slade Gorton) working in very close coordination with Representative Sid Flanagan, Chairman of the Legislature's Interim Committee on Water Resources and the committee's minority leader, Representative Thompson. Chapter 90.54 RCW was written by the writer early in the 1971 session because the Interim Committee could not reach an agreement on a committee bill for introduction in the 1971 session. While portions of chapter 90.54 RCW, not including its instream flow provisions and "fundamentals," had its roots in the Interim Committee's efforts, chapter 90.54 RCW was drafted independent of that Interim Committee and after it ceased to actively function.

II. BACKGROUND

A. The 1917 Surface Water Code.

Since 1917, the foundation state surface water management statute has been the surface water code, chapter 90.03 RCW. The centerpiece of that code is the water right permit system contained in RCW 90.03.250 through RCW 90.03.340. This permit system has, since its enactment, provided the exclusive means under Washington law for establishing new rights to divert surface waters. RCW 90.03.010.

While the code does not expressly deal with a minimum flow retention policy for streams, it does require the administrator of the permit system to deny an application for a water right permit if it would be "detrimental to the public welfare" or the "public interest." RCW 90.03.290. As a matter of historical implementation, the administrator of the water right permit system has measured applications for water rights against this public interest criteria and, when he determined that it was not "detrimental to the public interest," issued water right permits and certificates that authorized diversions which dewatered (dried up) streams. Decisions having this full "appropriation" impact were applied to many streams of our state, especially those located east of the Cascade Range.

B. The Amendments to the Water Code in the 1940s and Related State Statutory Provisions

The 1917 water code's permit system was modified in 1947 by requiring, in RCW 90.03.290, that:

> . . . in the event a permit is issued by the supervisor upon any application, it shall be his duty to notify both the director of fisheries and the director of game of such issuance.

See section 1, chapter 133, Laws of 1947.

Thereafter, in 1949, the legislature modified the relationship of the water resource management agency and the two state fishery management agencies in RCW 75.20.050. That section provides:

> It is the policy of this state that a flow of water sufficient to support game fish and food fish populations be maintained at all times in the streams of this state.

> The director of ecology shall give the director of fisheries and the director of game notice of each application for a permit to divert water, or other hydraulic permit. The director of fisheries and director of game have thirty days after receiving the notice to state their objections to the application. The permit shall not be issued until the thirty-day period has elapsed.
>
> The director of ecology may refuse to issue a permit if, in the opinion of the director of fisheries or director of game, issuing the permit might result in lowering the flow of water in a stream below the flow necessary to adequately support food fish and game fish populations in the stream.
>
> The provisions of this section shall in no way affect existing water rights. (Emphasis supplied.)

C. The Water Resources Agency's Implementation of the 1940's Enactments.

During the 1950s and through the mid-1960s, the water agency[3] administered the 1917 water code's permit system in accordance with the statutory requirement to notify the fishery agencies of water right permit applications and to consider the recommendations of the agencies as to water needs for fishery resources. Thereafter, following the aforenoted 1917 water code's "public interest" criteria, which included taking into account the information obtained from the departments of fisheries and game, the code's administrator ruled upon water right permit applications.

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3 From 1950-1957 the water right permit system of the 1917 code was administered by the department of conservation and development, from 1957-1967 by the department of conservation, and through the remainder of the 1960's by the department of water resources.

In rulings on many water right applications, the administrator issued permits containing a condition that no diversions of public waters may be made which would cause a stream to fall below a specified minimum flow designed to protect instream fishery values. In other fishery value protection situations, the administrator "closed" streams to further appropriation and denied applications for permits. On the other hand, applications were also approved that authorized a stream to be, in effect, dewatered, i.e., dried up.

Of note, all of the above-described decisions were made by the administrator without reference to any published agency criteria or guidelines relating to the interrelationship of the 1917 code and RCW 75.20.050. Indeed, there were no written "rules" or "guidelines" developed by the water code's administrator during this period. Implementation thereof was accomplished through an inter-agency effort administered on an ad hoc basis with regular (twice-monthly) exchanges of fishery "needs" information imparted at meetings of representatives with expertise of the agencies involved. The history of this period is that the recommendations of the fishery agencies were ofttimes accepted and permits so conditioned.

It is against this backdrop that the legislative actions of the 1967-1971 period, central to your inquiry, took place.

III. THE 1967-1971 MINIMUM BASE FLOW LEGISLATION

A. Chapter 90.22 RCW - 1967 version.

The "minimum flow" legislation of 1967 was enacted, in primary part, to establish a policy of retaining water in streams, in order that thereafter various instream values (including fish populations) would not be forever lost through "overappropriation" under the state's water right laws. A major change brought about by the 1967 legislation was the statutory direction to the Department of Water Resources (predecessor agency to the Department of Ecology) to retain waters in streams. Prior to 1967, the "public interests" determinations made by the Department of Water Resources did not require minimum flows to be retained in streams when requested by the fishery agencies. With the coming of the 1967 legislation, the Department of Water Resources was required to establish minimum flows for a stream, when requested by one of several state agencies, namely the department of fisheries, the game commission, or the water pollution control agency. After minimum flows for a stream were formally established by the department,

> (n)o right to divert or store public waters shall be granted by the department of water resources which shall conflict with regulations adopted pursuant to RCW 90.22.010. . . . RCW 90.22.030.

The 1967 legislation also required the establishment of all minimum flows for a stream to be "through the adoption of rules." RCW 90.22.020.[4] Thus, flow-setting actions of the government agency were to be formalized in a context that allowed the public to be fully aware of their impact. See RCW 90.22.020.

In terms of the extent of flows and levels to be maintained, the 1967 legislation contemplates "minimum" flows to be established. These flows are designed to "protect," where appropriate, aesthetic, recreational, fishing, and wildlife values, and to "preserve" water quality necessary to meet water quality standards established by the water pollution control commission.[5] The intent was, simply stated, that streams with certain values were not to be dried up or reduced to trickles. Rather, flows, usually of an amount extending to a limited portion of a stream's natural flow, were to be retained in order to protect instream values of the stream from total extinguishment.[6] Of import here, the thrust of the 1967 legislation was not designed to maintain a flow in excess of the smallest amount necessary to satisfy the protection and preservation values and objectives just noted.

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4 Thus, minimum flows, set pursuant to RCW 90.22.020, must be established pursuant to the rule-making procedures of the state's Administrative Procedures Act. See chapter 34.04 RCW.

5 The powers of the Water Pollution Control Commission contained in chapter 90.48 RCW are now vested in the Department of Ecology. See RCW 43.21A.060.

6 It should be noted that the establishment of minimum flows for a stream does not assure that such flows will be in the stream. In streams which are dewatered or drastically reduced due to the exercise of water rights established prior to the establishment of minimum flows, the minimum flows settings constitute only state policy objectives for the stream rather than a reality.

B. Chapter 90.22 RCW - the 1969 amendment.

During 1967 and 1968, no minimum flow or level establishment proceedings were initiated by the Department of Water Resources. This condition of inactivity came about because neither of the two fisheries management agencies nor the water pollution control commission requested the department to take such steps.

In 1969, the legislature broadened the power of the Department of Water Resources to adopt flows and levels by allowing it to do so on its own initiative. RCW 90.22.010 (section 3, chapter 284, Laws of 1969 ex. sess.). This additional grant of power did not, however, change the basic intent of the 1967 enactment as it pertained to minimum flows to be established for a stream.

C. Water Resources Act of 1971 - Chapter 90.54 RCW

The issue of the degree of flows to be maintained within streams was addressed once again by the legislature two years later. In the Water Resources Act of 1971, chapter 90.54 RCW, the legislature set forth a wide range of water management policies, entitled "fundamentals," together with directions to the Department of Ecology primarily to implement them. Two of the policies are of special note here; namely, RCW 90.54.020 and RCW 90.54.020 (3)(a) both quoted at the outset.

The words of the "fundamental" of RCW 90.54.020(3)(a), while not identical to those of the 1967 enactment contained in RCW 90.22.010, represent an affirmation of the general minimum instream flow policy established in 1967. The Department of Ecology's formal interpretation of the two statutes' interplay appears to be in accord therewith. See WAC 173-549-016, adopted by the Department of Ecology in 1984 pursuant to RCW 90.54.040, which provides:

> For the purposes of this chapter, the term minimum instream flow shall be synonymous with the term base flow as defined in chapter 90.54 RCW and the term minimum flow as defined in chapter 90.22 RCW.

See a similar interpretation by the Department of Ecology in WAC 173-509-020.

This interpretation, established by rule by the agency with primary responsibility for implementation of the two statutes noted, is entitled to great weight. See Weyerhaeuser Co. v.

Department of Ecology, 86 Wn.2d 310, 545 P.2d 5 (1976). The department's position is not only a reasonable one but is one that is, in my view, completely faithful to legislative intent. This conclusion is derived from my direct, extensive participation in the legislative activity leading to the two statutory enactments.[7]

Of import here, this does not mean that the Department of Ecology is without power, under appropriate factual patterns, to establish instream flow requirements that are greater than those established under the limited flows provided by RCW 90.22.010, as affirmed in the fundamental of RCW 90.54.020 (3)(a). Northwest Steelhead and Salmon Council, et al. v. State of Washington, Department of Ecology, et al., PCHB No. 81-148, page 16, Conclusion of Law IX (decided August 3, 1983). Reference is made to the second fundamental of the Water Resources Act of 1971 noted earlier. That section, RCW 90.54.020(2), provides:

> Allocation of waters among potential uses and users shall be based generally on the securing of the maximum net benefits for the people of the state. Maximum net benefits shall constitute total benefits less costs including opportunities lost.

When the two above-quoted fundamentals are read together, the Department of Ecology is required, as it performs its water management responsibilities, to make two determinations related to the retention of waters within a stream. The first determination is to provide for "minimum flows" (or "base flows") as contemplated by RCW 90.22.010 and RCW 90.54.020(3)(a). The second is to determine, after conducting a "maximum net benefits" test as described in RCW 90.54-.020(2), whether an additional increment of flow should be provided above "minimum" flows to satisfy instream beneficial uses, such as aesthetic and fisheries uses. Accord; Northwest Steelhead and Salmon Council, et al. v. State of Washington, Department of Ecology, et al., supra, Conclusion of Law VIII.

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7 See footnotes 1 and 2.

IV. CONCLUSION

The state's instream water policy of 1967-1971 is solidly founded. It is a progressive one that operates on the basic proposition, contrary to a historical state policy of long standing, that retention of minimum flows is required in most perennial streams not already fully appropriated. In addition to this "first priority" of water allocation for the protection of basic instream values, the Water Resources Act of 1971's mandate to embody "maximum net benefit" principles to the allocation of remaining unappropriated waters of a stream allows, when merited, for increasing instream flows beyond the first priority foundation flows.

This memorandum contains my views and does not constitute a formal opinion of this office.

I trust this is of assistance to you. Please contact me if you have any questions.

CBR:sc

DEPARTMENT OF ECOLOGY
Environmental Assessment Program

February 8, 2012

To: Brian Walsh, WR Program Development and Operations Support Section
Cynthia Nelson, SEA Program Southwest Region Section

From: Paul J. Pickett, EA Program Modeling and Information Services Unit
Brad Caldwell, WR Program Development and Operations Support Section

Subject: **Flows at proposed Instream Flow regulatory control stations in the Dungeness portion of WRIA 18**

Introduction

During the study that assessed gages in the Elwha-Dungeness Watershed Planning Area (Pickett, 2012), Cynthia Nelson requested an analysis of flows at the proposed Instream Flow (ISF) regulatory control stations for discussion on small streams by the Local Leaders Work Group's restoration subcommittee. These stations were identified in the draft rule for instream flows in the Dungeness portion of Water Resource Inventory Area (WRIA) 18. This memo presents the results of that analysis, and provides some discussion to set those results in an appropriate context.

Methods

Flow records were collected for the nine regulatory control stations proposed in the draft rule for the Dungeness portion of WRIA 18 (Table 1). These flow records include:

- Existing and historical Ecology stream gages
- Flow data collected by the Clallam County Streamkeepers (Chadd, 2011)
- Spot measurements made by Ecology's Water Resource Program (Caldwell, 2011)
- Flow data collected as part of a Total Maximum Daily Load study (Shedd, 2001; Sargeant, 2002)
- Other flow data from past environmental studies available in Ecology's Environmental Information Management System (https://fortress.wa.gov/ecy/eimreporting/search.asp)

Flow records were chosen for flow gaging sites that were closest to and representative of the proposed control station. Three gaging sites were Ecology gages with continuous data. Data from the rest of the gaging sites were individual flow measurements.

Daily averages of flows were calculated where more than one individual measurement was available for the same day. These individual or average flows for each day were compared to the monthly ISF levels proposed in the draft rule. The percentage of days when flows fell below the proposed ISF level was then calculated for each month at each station.

For the three continuous flow gaging stations, regression-based models based on active Ecology and USGS gaging stations were developed, and the results are reported in Pickett (2012). Using the same methodology used in Pickett (2012) for manual staff gages, regressions were also developed for the six control stations where individual flow measurements were collected.

Table 1. Potential regulatory control stations in the Elwha-Dungeness planning area.

Stream Management Unit Name	Control Station Gage Number	River Mile	Latitude (North) Deg	Min	Sec	Longitude (West) Deg	Min	Sec
Proposed instream flow control stations from draft Dungeness rule (Chapter 173-518 WAC)								
Bagley Creek at Highway 101		1.4	48	5	56	123	19	47
Bell Creek at Schmuck Road		0.2	48	5	1	123	3	25
Cassalery Creek at Woodcock Road		1.8	48	6	59	123	6	31
Dungeness River at Schoolhouse Bridge	ECY 18A050	0.8	48	8	37	123	7	43
Gierin Creek at Holland Road		1.7	48	6	5	123	4	40
Matriotti Creek at Lamar Lane		1.3	48	7	54	123	9	46
McDonald Creek at Old Olympic Highway	ECY 18P070	1.6	48	6	20	123	13	17
Meadowbrook Creek at Sequim-Dungeness Way		1.2	48	8	41	123	7	27
Siebert Creek at Old Olympic Highway	ECY 18L060	1.3	48	6	24	123	16	42

Results

The results of the analysis of flows at proposed regulatory control stations are shown in Table 2. For each site and each month, the number of days with flow data are shown, along with the percentage of days when flows were below (not meeting) the ISF levels from the proposed rule.

Most of the sites (8 of 9) have very few flow measurements, so the results should be interpreted with caution. Typically, to determine the 10 and 90 percent flow frequencies with a minimum of reliability requires 10 years of data gage data. This would be around 3650 flow measurements. Note that 6 sites only have 19 to 158 flow measurement and only 1 site has more than 3650 daily values. **Therefore, the frequency calculated for flows in 8 of 9 streams cannot be considered representative or statistically significant.** Only the Dungeness River has enough flow measurements (4272) to determine the frequency different flows occur at an acceptable level of significance.

A summary of the regressions developed for control stations with individual measurements are shown in Table 3. In general the regressions were of fair to poor quality. Also, a comparison of low flow measurements to predicted values suggests that the regressions perform poorly in predicting low flows.

Discussion

Care should be taken in interpreting these results. **For the gaging stations with individual measurements, it's likely that these values are not representative of the full range of flows, but rather are biased towards low flow conditions.** This may occur either because the assessment was targeted at low flow conditions, or because dates for flow measurements were selected for fair weather.

In general, more data are needed to better characterize flows at the proposed control stations. The results provided may prove useful in making decisions with limited data. However, in the future it may be necessary to collect more information on flow from direct measurements in order to meet water management needs.

An important consideration in looking at hydrographs is that much information on peak daily flows is lost through averaging. Fish can quickly take advantage of a spike in flows to migrate upstream and spawn. This potential can be overlooked if daily stages and 15-minute interval measurements aren't examined.

The basis and purpose of the ISF values should also be considered in interpreting these results. No one has to put water in the stream to meet the proposed ISF levels: these flow levels are only used by Ecology to determine when there is surplus water unneeded for protecting fish and the other instream flow values. Setting instream flows levels by rule provides one criterion that allows Ecology to decide whether additional surface water diversions should be allowed.

Instream flows set in rule are not expected to be in the stream at all times. Instream flow levels are met with varying frequencies. If instream flows were set so that they could always be met, then the flow in the stream would be consistently reduced to the 1-in-100-year record low flow and the fish population would be decimated.

Table 2 shows that most of the flow measurements on the small streams are below the stream flow levels which provide the necessary depths and velocities for spawning and rearing by salmonids. This means no flow is available above the levels needed to protect fish. Flow levels and biological data must be assessed to compare the adequacy of flows to the needs of each species and its life stages.

References

Caldwell, B. 2011. Personal Communication. Water Resource Program, Washington State Department of Ecology, Olympia, WA.

Chadd, E. 2011. Personal Communication. Program Coordinator, Streamkeepers of Clallam County. http://www.clallam.net/streamkeepers/

Pickett, P. 2012. Elwha-Dungeness Watershed Planning Area Prediction of Gaged Streamflows By Modeling. Publication No. 12-03- , Washington State Department of Ecology, Olympia, WA.

Sargeant, D. 2002. Dungeness River and Matriotti Creek Fecal Coliform Bacteria Total Maximum Daily Load Study. Washington State Department of Ecology, Olympia, WA. Publication No. 02-03-014. www.ecy.wa.gov/biblio/0203014.html

Shedd, J.R. 2001. Dungeness River/Matriotti Creek Fecal Coliform Bacteria Total Maximum Daily Load Study Streamflow Summary. Washington State Department of Ecology, Olympia, WA. Publication No. 01-03-039. http://www.ecy.wa.gov/pubs/0103039.pdf

Table 2. Comparison of flow measurements (individual or continuous) to instream flow values at proposed regulatory control stations.

Month[1]	Bagley Creek				Bell Creek				Cassalery Creek			
	No. of days measured[2] (individual)	ISF values[3] (cfs)	No. of Days < ISF[4]	% < ISF[5]	No. of days measured (individual)	ISF values (cfs)	Days < ISF	% < ISF	No. of days measured (individual)	ISF values (cfs)	No. of Days < ISF	% < ISF
1	9	15	7	78%	18	11	18	100%	6	5	6	100%
2	0	10	-	-	7	7	7	100%	4	3	2	50%
3	1	29	1	100%	10	22	10	100%	3	12	3	100%
4	13	29	13	100%	16	22	16	100%	7	12	7	100%
5	3	20	3	100%	17	14	17	100%	3	8	3	100%
6	5	20	5	100%	10	14	10	100%	7	8	7	100%
7	10	6	10	100%	11	4	11	100%	8	2	5	63%
8	16	6	16	100%	19	4	19	100%	16	2	8	50%
9	6	6	6	100%	15	4	15	100%	9	2	6	67%
10	17	6	17	100%	18	4	17	94%	8	2	2	25%
11	2	15	2	100%	9	11	9	100%	5	5	4	80%
12	1	15	1	100%	8	11	8	100%	2	5	2	100%
Annual	83		81	98%	158		157	99%	78		55	71%
Month	Meadowbrook				Gierin Creek				Matriotti Creek			
	No. of days measured (individual)	ISF values (cfs)	No. of Days < ISF	% < ISF	No. of days measured (individual)	ISF values (cfs)	No. of Days < ISF	% < ISF	No. of days measured (individual)	ISF values (cfs)	No. of Days < ISF	% < ISF
1	4	12	4	100%	1	5	1	100%	38	14	10	26%
2	5	8	3	60%	0	3	-	-	34	10	4	12%
3	5	24	5	100%	1	12	1	100%	35	27	35	100%
4	12	24	12	100%	1	12	1	100%	36	27	36	100%
5	13	16	13	100%	1	8	1	100%	40	18	38	95%
6	14	16	14	100%	1	8	1	100%	44	18	42	95%
7	17	5	14	82%	3	2	1	33%	42	5	4	10%
8	18	5	16	89%	3	2	1	33%	43	5	3	7%
9	14	5	11	79%	3	2	2	67%	40	5	4	10%
10	10	5	9	90%	2	2	1	50%	38	5	3	8%
11	2	12	2	100%	2	5	2	100%	15	14	6	40%
12	3	12	2	67%	1	5	1	100%	36	14	4	11%
Annual	117		105	90%	19		13	68%	441		189	43%

Table 2, continued. Comparison of flow measurements (individual or continuous) to instream flow values at proposed regulatory control stations.

	Dungeness River				McDonald Creek				Siebert Creek			
Month	No. of days measured (continuous)	ISF values	No. of Days < ISF	% < ISF	No. of days measured (continuous)	ISF values (cfs)	No. of Days < ISF	% < ISF	No. of days measured (continuous)	ISF values (cfs)	No. of Days < ISF	% < ISF
1	372	575	266	72%	230	36	143	62%	192	36	119	71%
2	339	575	323	95%	211	24	168	90%	157	24	138	88%
3	360	575	341	95%	269	63	232	86%	243	63	238	98%
4	353	475	335	95%	255	63	248	97%	238	63	238	100%
5	372	475	225	60%	271	42	262	97%	218	42	218	100%
6	353	475	103	70%	216	42	213	99%	195	42	195	100%
7	372	475	241	78%	252	15	252	100%	200	15	200	100%
8	353	180	261	89%	225	15	225	100%	203	15	203	100%
9	329	180	306	93%	211	15	211	100%	177	15	177	100%
10	341	180	280	82%	222	15	210	95%	272	15	258	95%
11	356	575	274	77%	240	36	193	80%	192	36	152	79%
12	372	575	284	76%	235	36	168	71%	210	36	170	81%
Annual	4272		3239	76%	117		105	90%	2497		2306	92%

[1]Month 1 = January
[2]Number of days with measured flow data
[3]Instream Flow (ISF) levels proposed in the draft rule for the Dungeness portion of the Elwha-Dungeness Water Resource Inventory Area (East WRIA 18)
[4]Number of daily flow measurements below (not meeting) the instream flow levels proposed in the draft rule
[5]Percentage of daily flow measurements below (not meeting) the instream flow levels proposed in the draft rule

Table 3. Regressions for proposed regulatory control stations

Station Name	Reference Station Code	Baseflow Threshold (cfs)	Hydrograph Separation	Linear or Power?	Coefficient	Intercept or Exponent	r^2	n	Quality
Bagley Creek	McD-101	(Primary)	All year	Linear	0.161	0.878	0.83	15	Fair
at Highway 101	Dun-ECY	(Secondary)	All year	Power	0.0411	0.773	0.50	31	Poor
Bell Creek	McD-101	(Primary)	All year	Power	0.478	0.396	0.48	33	Fair
at Schmuck Road	Ennis	(Secondary)	All year	Power	0.520	0.316	0.15	36	Poor
Cassalery Creek	McD-101	(Primary)	All year	Power	0.392	0.321	0.13	40	Poor
at Woodcock Road	Ennis	(Secondary)	All year	Linear	0.0152	0.981	0.06	38	Poor
Gierin Creek	Dun-GS	(Primary)	All year	Power	0.439	0.333	0.06	19	Poor
at Holland Road									
Matriotti Creek	McD-101	(Primary)	All year	Linear	0.103	5.08	0.21	67	Fair
at Lamar Lane	Ennis	(Secondary)	All year	Linear	0.0740	5.15	0.15	65	Fair
Meadowbrook Creek	Ennis	(Primary)	All year	Linear	0.108	2.75	0.67	18	Fair
at Sequim-Dungeness Way	McD-101	(Secondary)	All year	Linear	0.104	2.54	0.60	19	Fair

ORPC Exhibit 5

A summary of these projects follow; each of these can be found at http://hws.ekosystem.us/:

- In 1998, state, tribal, and conservation groups bought 128 acres and restored 42 acres of riparian habitat through perpetual conservation easements and habitat restoration projects in the flood plain of the lower reaches of this highly degraded river. This project was completed in 2001. *Dungeness River Watershed Restoration (97-1300).*
- The Hurd Creek project reconfigured the creek and installed a fish ladder to assist in fish passage. The Clallam County Conservation District also restored spawning habitat from the Dungeness River up to and including the Hurd Creek intake. Project officials reported observations of chum and coho salmon. This two-year project lasted from 1999-2001. *Hurd Creek Habitat Restoration (99-1331).*
- In 1999-2000, the Clallam County Conservation District - in an effort to restore salmon habitat and improve water quality – installed 1,000s of feet of livestock exclusion fencing, installed stream crossings, planted approximately 100 acres of riparian corridor, and implemented about 43,000 feet of instream fish improvements since the early 1990s. *Lower Dungeness Watershed Restoration (99-1655).*
- Around the same time (1999-2000), the North Olympic Land Trust (NOLT) acquired 80 acres of riparian land and 150+ acres of land via conservation easements along the Dungeness River in the three years prior. *Dungeness/Jimmycomelately Riparian Land (99-1657).*
- From 2001-2005, the USFS decommissioned approximately six miles of forest roads between River Miles 15-19 to minimize road-related sediment deposited into the river; the project also removed culverts and unstable fills to improve drainage. *Upper Dungeness Road Decommissioning (00-1821).*
- In 2002-2008, Clallam County acquired 10 properties at the mouth of the Dungeness River, equating to about 58.74 acres, to restore ecological process. This project became known as "Rivers End." The project removed several residential structures and septic systems from the site. Proponents then planted over 4,000 trees and shrubs intending to create a forested floodplain. The project benefits spawning and rearing chum, pink, and Chinook salmon. *Dungeness Estuary Restoration: Phase I (01-1373).*
- In 2003, Sequim Prairie Tri-Irrigators obtained an easement and constructed a water storage and distribution facility, which would supply water to 670 acres of farmland. The reservoir holds over 4 million gallons; and the project approximately 19,000 feet of open ditch, which resulted in about 3.0 cfs of water savings. The project "improved habitat for all species of fish" in the lower six miles of the Dungeness River. This project was completed in 2006. *Sequim Prairie Tri-Irrigation Reservoir (02-1621).*
- In 2004, the Agnew/Dungeness Irrigation District tight-lined approximately 32,000 feet of irrigation lines, resulting in roughly a 2.0 cfs savings. Completed in 2009, the project improved habitat and instream flow levels for The Dungeness River and its tributaries. *Agnew / Dungeness Water Conservation (04-1663).*
- Beginning in 2005, the Jamestown Tribe constructed seven large engineered logjams and two small ones to provide rearing and resting habitat for salmon. Project proponents note that as the river "re-grades" itself, the side channels will be re-activated, which will in turn provide more spawning and rearing habitat. Gravel bars were also stabilized as part of this project. This project was completed in 2008. *Dungeness River Railroad Bridge Restoration (04-1589).*
- In 2006, the Clallam/Cline Irrigation District tight-lined 16.75 *miles* open ditches and another 12.75 miles of closed ditches, resulting approximately 6.0 cfs in savings. The project intended to benefit all salmon species; the project was completed in 2009. *Clallam-Cline Water Conservation (06-2272/ 07-1809).*

- In 2007, the project involved creating a brackish-water system connected to the Dungeness River, which produced approximately five acres of "high quality" salmon rearing habitat. The project also removed a tidal dike on WDFW property, which opened up an additional three acres to tidal action and reduced ponding and fish stranding. This project also involved planting about nine acres of floodplain. The bulk of this project was completed in 2011, though work continues dependent upon funding. *Dungeness River Estuarine Restoration (06-2133/ 07-1060).*
- Also in 2007, another project acquired 6.35 acres for dike setbacks. WDFW already owns several parcels on the east side of the dike. Once the setback is done, the side channel restoration will provide habitat for pink, Chinook, steelhead, and other fish. This portion of the project was completed in 2012. Other property was acquired in the first phase of the project running concurrently, and the *Peninsula Daily News* reported on Oct. 17, 2013 that another parcel is expected to be bought as part of the continuation of this project. *Lower Dungeness River Floodplain Acquisition (07-1811); Lower Dungeness River Floodplain Acquisition Phase II (07-1874); http://www.peninsuladailynews.com/article/20131017/news/310179995/dungeness-dike-setback-awaits-feasibility-study.*
- Another continuing project initiated in 2007 involves restoring and reconnecting approximately 50 acres to the Dungeness River. The project goal is to enhance and stabilize the connection between Meadowbrook Creek and the Dungeness River. The feasibility study described the Dungeness River and its watershed as "somewhat degraded." The current project is part of the "continuing effort to restore" habitat in and around the Dungeness River. The project is expected to increase rearing and transitional habitat for chum, Chinook, and other fish, as well as enhance the stream by removing hard armoring and a small levee to provide additional off-channel rearing habitat. *Meadowbrook Creek Feasibility and Design (07-1820); Meadowbrook Creek and Dungeness River Reconnection (11-1343).*
- In 2010, the Jamestown Tribe secured funds for the purchase of 27 acres of riparian forest, which consisted of 1,400 ft of river channel along the Dungeness River and 4,700 ft of side channel. The site was a high priority acquisition and also contained a previously installed engineered logjam. The sale was completed in 2013 due to the death of one of the owners. *Dungeness Habitat Protection (10-1496).*
- In 2013, the Jamestown Tribe bought 13 acres of "high quality" riparian habitat along the Dungeness River. The funding for this purchase was initiated in 2008; as support for funding the project, proponents noted that this purchase would bring this portion of the Dungeness close to "critical mass" for conservation ownership. The parcel is located next to another tribal-owned property and near other publically-owned properties. *Dungeness Riparian Habitat Protection - Clayton (13-1066).*

-----Original Message-----
From: Barwin, Robert F. (ECY)
Sent: Friday, April 13, 2012 11:21 AM
To: Patora, Kasia (ECY)
Subject: RE: Max net benefits -WRIA 18 rule

Oh yeah, this was the concluding piece of a settlement with CELP. Barbara Markham and Mary Sue Wilson were my AGs in the Quad Cities and other associated Columbia River litigation from 2001-2005. Alan Reichman is WRPMT's primary advisor (and has been for a long time). I forget who provided Alan with staff support (I think Barbara) because I was busy managing through another drought in 2005 when the policy/interpretive statement was adopted.

Bob Barwin, Environmental Engineer
Water Resources Program, Central Regional Office
509-457-7140

From: Patora, Kasia (ECY)
Sent: Friday, April 13, 2012 10:03 AM
To: Barwin, Robert F. (ECY)
Cc: Chen, Allen (ECY); Wessel, Ann (ECY)
Subject: RE: Max net benefits -WRIA 18 rule

OK, by your policy statement, an MNBA isn't appropriate here. I take it your AAG is aware of this and has reviewed it (or the one at the time the statement was created did)?

From: Barwin, Robert F. (ECY)
Sent: Friday, April 13, 2012 9:55 AM
To: Patora, Kasia (ECY)
Cc: Chen, Allen (ECY); Wessel, Ann (ECY)
Subject: RE: Max net benefits -WRIA 18 rule

Click me <http://www.ecy.wa.gov/programs/wr/rules/images/pdf/pol2025.pdf>
for POL-2025, the policy/interpretative statement on when to perform maximum net benefits analyses.

Bob Barwin, Environmental Engineer
Water Resources Program, Central Regional Office
509-457-7140

ORPC EXHIBIT 6

From: Patora, Kasia (ECY)
Sent: Friday, April 13, 2012 9:46 AM
To: Barwin, Robert F. (ECY)
Cc: Chen, Allen (ECY); Wessel, Ann (ECY)
Subject: RE: Max net benefits -WRIA 18 rule

OK! So we have an interpretive statement!

While I finish reading through this chain, can you please send me a copy of (or a link to) the interpretive statement?

Even if we wind up not doing an MNBA, I'd like to include a copy of the interpretive statement in the rule file econ. section, with a note explaining how it applies in this case.

Thanks!

-Kasia

From: Barwin, Robert F. (ECY)
Sent: Friday, April 13, 2012 9:37 AM
To: Patora, Kasia (ECY)
Cc: Chen, Allen (ECY); Wessel, Ann (ECY)
Subject: FW: Max net benefits -WRIA 18 rule

Here you go.

Bob Barwin, Environmental Engineer
Water Resources Program, Central Regional Office
509-457-7140

From: Barwin, Robert F. (ECY)
Sent: Wednesday, February 29, 2012 1:35 PM
To: Hoff, Tryg (ECY)
Cc: Loranger, Thomas (ECY); Wessel, Ann (ECY)
Subject: RE: Max net benefits -WRIA 18 rule

Well, what is the public policy that justifies deviating from the policy/interpretive statement we adopted in 2005 as one piece of the Quad-Cities settlement agreement with CELP? The law identifies 2 competing and mandatory objectives that cannot be met by looking only at the remaining water available. The solution in the rule is to reach into the bucket of previously allocated water and create an equitable reallocation to domestic and instream flow protection use.

It protects existing rights. It satisfies the explicit requirements of the statute. It isn't creative and hypothetical; it's precisely what the legislature directed us to do.

Bob Barwin, Environmental Engineer
Water Resources Program, Central Regional Office
509-457-7140

From: Hoff, Tryg (ECY)
Sent: Wednesday, February 29, 2012 1:18 PM
To: Barwin, Robert F. (ECY)
Cc: Loranger, Thomas (ECY); Wessel, Ann (ECY)
Subject: RE: Max net benefits -WRIA 18 rule

Bob beat me to the punch in reading our policy interpretive statement.

My Conclusion is: We may not have to perform the Maximum Net Benefits analysis.

Although:
1. I don't think our interpretive statement trumps RCW and.
2. The "reserve" may be mischaracterized in this rule as a reserve. Also.
3. My understanding is the "reserve" can serve other uses beyond domestic use.

From: Barwin, Robert F. (ECY)
Sent: Wednesday, February 29, 2012 12:39 PM
To: Hoff, Tryg (ECY)
Cc: Loranger, Thomas (ECY); Wessel, Ann (ECY)
Subject: RE: Max net benefits -WRIA 18 rule

Let's take this one step at a time to keep it digestible...

"In my opinion using the first line of RCW 90.54.020 (3) to appropriate the remaining water in the Dungeness system while disregarding all other listed uses CANNOT maximize the net benefits. It can't because you can describe alternatives (opportunities lost) that have higher value with ease. One that comes to mind is using the last sentence in RCW 90.54.020 (3) OCPI for domestic use which happens to be the highest value."

Bob's Question #1: Why are we having this conversation? We have two competing uses that involve the use of appropriations/reservations within the rule and our policy is that neither requires a maximum benefits analysis.

POLICY/INTERPRETIVE STATEMENT ON WHEN TO PERFORM A MAXIMUM BENEFITS ANALYSIS:

1. Ecology will implement the maximum net benefits provision solely in the context of rule-making associated with allocations of water and decisions to approve watershed plans that include reservations that allocate water. This includes:

a. Development of rules pursuant to RCW 90.54.050(1) to create a "reservation" for a particular use or uses other than for the purpose of satisfying human domestic needs; and

b. Development of rules that would quantify the remaining water available for appropriation within a basin, particularly if the rule would tentatively commit a large quantity of water or a major share of the water resources of the basin, to future new appropriations.

c. Ecology's approval of a watershed plan developed under RCW 90.82 that contains a reservation for a particular use or uses other than for the purpose of satisfying human domestic needs.

2. Ecology will not perform a maximum net benefits analysis in the following situations:

a. When considering an application for a new water right under RCW 90.03.290 or RCW 90.44.060, or an application for change, transfer or amendment under RCW 90.03.380 or RCW 90.44.100,

b. When water is appropriated (or retained) to provide for minimum water flow or levels or minimum instream flows under Chapters 90.22, 90.82 or
90.54 RCW. These water flows or levels can be established for instream flows (RCW 90.22.010) or for "stockwatering requirements" for other than and

c. When parties use water under the groundwater exemption identified in 90.44.050.

Bob Barwin, Environmental Engineer
Water Resources Program, Central Regional Office
509-457-7140

From: Hoff, Tryg (ECY)
Sent: Wednesday, February 29, 2012 12:11 PM
To: Barwin, Robert F. (ECY)
Cc: Loranger, Thomas (ECY); Wessel, Ann (ECY)
Subject: RE: Max net benefits -WRIA 18 rule

Domestic use has the highest drop per drop value. Now if you read RCW 90.54.020 (1) the list almost describes perfectly in order from highest value to lowest value(by volume of water).

Now your argument Bob, while creative(and hypothetical in nature), would make one believe that it trumps any other scenario. Now RCW 90.54.020 (2) talks about opportunity costs. I.e. you're are supposed to weigh out a variety of options for giving you the "maximum net benefits".

In my opinion using the first line of RCW 90.54.020 (3) to appropriate the remaining water in the Dungeness system while disregarding all other listed uses CANNOT maximize the net benefits. It can't because you can describe alternatives (opportunities lost) that have higher value with ease. One that comes to mind is using the last sentence in RCW 90.54.020 (3) OCPI for domestic use which happens to be the highest value.

Now ANY combination of Domestic use and Fish protection is going to be higher than just fish protection alone. That is how you "maximize the net benefits".

Given that the statute also tells you to protect and preserve domestic use for human needs in RCW 90.54.020 (5), not doing this at all demonstrates you are not following the statute at all in my opinion..let alone maximizing the net benefits.

Under your argument even the smallest creek would somehow trump a civilization that might be built upon it..like maybe Seattle?

From: Barwin, Robert F. (ECY)
Sent: Wednesday, February 29, 2012 11:23 AM
To: Hoff, Tryg (ECY)
Cc: Loranger, Thomas (ECY); Wessel, Ann (ECY)

Subject: Max net benefits -WRIA 18 rule
Importance: High

For if/when we can talk today (think of this as an opportunity for bonus mutual torture!), think on this...

There is not year around, reliable water supply in the Dungeness system.
When people now rely on the permit exemption they get 2 things; 1.) the ability to build a house and use water in and around it up to statutory limits and, 2.) because their right is no better than what they could have obtained by obtaining a permit, they also may have their use curtailed sometime in the future if senior users who cannot get their water call for it. Right now, that works because nobody has called for junior users to be curtailed. But, they can call for water whether it's happened in the past or not. This is part of the baseline without a rule. The other part of the baseline or current condition is that because nobody (either in government or in the applicant pool) has been good enough to figure out how to come up with mitigation in the face of low flows, the implications of the Irrigators MOA, and several ESA listings in the Dungeness and small streams, there have been no permits issued for larger uses of water. That's all about limited water availability and impairment conditions. In total, that's a zero benefit or maybe even a loss of opportunity if we put ourselves in the place of those waiting in line while the exempt users receive the "benefit" of the use of water.

The rule would change all three of these things. People could get water for new houses. People buying mitigation for new houses would also benefit by avoiding a legal fight and curtailment at some time in the future. Existing water users would have their water rights respected (rather than surreptitiously reallocated or stolen) and they could sell into a predictable market. Fisheries get protection from continued loss of habitat through the now-neglected impacts from new development. Investments ($10 million in 15 years?) in flow restoration get protection.

C'mon, doesn't that look like something that just might maximize net benefits?

Bob Barwin
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Water Resources Program
15 W. Yakima Ave, Suite 200
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-----Original Message-----
From: Loranger, Thomas (ECY)
Sent: Tuesday, February 28, 2012 10:27 AM
To: aseiter@olypen.com; Brastad, Andy (DOHi); commissioners@co.clallam.wa.us; Miller, Sheila Roark; Amanda Cronin; Bruce Aylward; Gary Smith; Joe Holtrop; mikek@clallampud.net; tomm@clallampud.net; Nelson, Cynthia (ECY); Wessel, Ann (ECY); phaines@sequimwa.gov; Scott Chitwood; asoule@co.clallam.wa.us; dougn@clallampud.net
Subject: Ecology's perspective on further review of existing instream flow studies on the Dungeness

February 28, 2012

Dear Local Leaders Water Management Work Group:

We have been pleased to participate in the Local Leaders Water management Workgroup (LLG) in the Dungeness and we appreciate all the good work that has gone into the summary recommendations. We welcome the recent questions about Instream Flow Incremental Methodology (IFIM) science and practice, especially related to the Dungeness IFIM studies conducted by the U.S. Fish and Wildlife Services that have been raised at the LLG and in other venues. There has been a very large investment in time and resources by scientists and the community in these flow studies and we want to be sure they are accurate as reasonably possible. Responses to recent questions regarding the science behind IFIM studies, how flow setting uses hydrologic and biologic information, and data gathered during the study process have been posted on-line at:

<http://www.ecy.wa.gov/programs/wr/instream-flows/01302012_dungeness_isf_qna.html>
http://www.ecy.wa.gov/programs/wr/instream-flows/01302012_dungeness_isf_qna.html

The original work done by the US Geological Survey was subjected to a thorough technical review by scientists and fish biologists from four organizations. We consider this as a valid check and balance of the science and conclusions. The original field work was carried out by Joe Hiss and Phil Wampler of the U.S. Fish and Wildlife Service. Field work was conducted in 1988 and 1989, and the study finalized in 1991. Among those reviewing this report were: Hal Beecher PhD and Tim Rymer with the Washington Department of Fish and Wildlife, Brian Winter PhD with the National Marine Fisheries Service, Brad Caldwell MS with Washington Department of Ecology, Randy Johnson with the Washington Department of Fish and Wildlife, and Mike Reed, Ann Seiter, and Brad Sele with Jamestown S'Klallam Tribe. The team used the habitat assessment model recognized by the courts. The team consisted of members who have an unusually large amount of expertise with this hydraulic model, including Dr. Hal Beecher, Dr. Brian Winter, Brad Caldwell and Phil Wampler. This group, formally called the Dungeness Instream Flow Group, also determined how to evaluate the fish-habitat relationships in the IFIM report. In addition, side channel studies were completed by the Bureau of Reclamation and the Jamestown S'Klallam tribe in 2003. In 2005 The Dungeness River Management Team recommended the proposed flows to be adopted by rule, and these recommendations were included in the final 2005 Elwha Dungeness Watershed Plan.

ORPC EXHIBIT 7

We invite the Local Leadership Group to review the questions and answers about habitat modeling techniques and data on our web site listed above and we will be happy to respond to any follow-up questions you may have. We understand the interest of some members of the public and organizations for still more assurance. However, Ecology stands firmly behind the original work and we do not recommend investing in new review of studies already completed for the following reasons:

. The existing flow studies for the Dungeness have been thoroughly reviewed by knowledgeable scientists and have been recommended for adoption in rule by the Dungeness Watershed Management Group in 2005.

. The work of both state and federal biologists and over the past 20 years have resulted in increases in depth and velocity standards used in fish preference curves used in the in the flow habitat assessment models. Since the Dungeness work was completed in 1991, redoing the habitat modeling will likely result in higher recommended flows for the Dungeness not lower.

. Revisions to recommended flows, whether lower or higher, will not impact water management practices under the proposed water management rule during the critical low-flow, high-use times of the year. The Dungeness is fully appropriated and no newly appropriated water will be available during that time period no matter what flows are adopted in rule

. The current rule proposal would allow new diversions for storage projects to take advantage of the open period on the Dungeness, when a well- designed project is proposed. The rule allocates water for diversion from high flows that would be interruptible when flows drop and sets up another section that could enable a storage project to divert water when the flows were not being met if criteria in the rule are met.

If you have any additional questions, please contact me at (360) 407-6672.

Sincerely,

Tom Loranger
Deputy Program Manager|Water Resources Program | Department of Ecology
360 407-6672
<mailto:Tom.Loranger@ecy.wa.gov> Tom.Loranger@ecy.wa.gov