

Setting and protecting flows in the Dungeness River

Water. It is essential to all life. Western Washington has the reputation for lots of rain, but that assumption may need some examination. In the middle of winter, we certainly see abundant, rushing rivers. We may hear reports of flooding. And there are exceptions: the Sequim area, for example, is generally quite dry, with an average yearly rainfall of 16 inches. But what happens to the winter precipitation come summer and fall?

Once the rains have stopped, the snow has melted, and temperatures are rising, do we still have a lot of water available for use? In most parts of the state, the answer is no. The *timing* of water availability is the key issue. Water is naturally most limited in the summer and fall – exactly the same time when demands are highest (think about the needs of agriculture, and lawn watering, for example). In addition to seasonal variations limiting available water, most water in the state is already in use – legally spoken for in the form of water rights.

Your representatives in the Legislature recognized many years ago that our precious water supply needs protection, to help ensure enough water to sustain people and the environment over the long-term. The Legislature assigned the Department of Ecology (Ecology) the job of adopting rules to protect and preserve sufficient water in streams for “instream resources” including fish, wildlife, recreational uses, water quality and livestock watering.

There can be enough water for all the various needs and demands placed on it, with careful management. One important tool for protecting streams is to establish stream flow levels in rule.

Water management and instream flows

The proposed water management rule for the Dungeness watershed (eastern Clallam County) addresses both the protection of the existing water supply and ways to get water for new uses. The rule would establish flow levels for the Dungeness River and eight smaller streams. *Stream flows* are the amount of water flowing down a river or stream. *Instream flows* are stream flow levels set in rule, a regulatory flow threshold used by Ecology to determine whether there is water to withdraw for new uses while still protecting fish and other instream resources.

WHY IT MATTERS

The amount of water flowing in a stream (stream flows) matters to people, farmers, local businesses, and to fish and the environment. Protecting stream flows matters to our Legislature. They decided flows should be protected and gave the job to the Department of Ecology to establish flow levels that will protect streams and all the resources that depend on adequate water.

A water management rule for the Dungeness watershed is expected to be adopted in September 2012. This publication focuses on the proposed summer and early fall flows the rule would establish for the Dungeness River (“instream flows”), and explains the difference between instream flows set in rule and the target restoration flows for the same period.

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Instream flows are specific levels of stream flow (measured in cubic feet per second, cfs) for a given stream, on a month-by-month basis following seasonal variations. Once adopted in rule, instream flows are established water rights intended to prevent further degradation from **future** withdrawals. Simply stated, instream flows help keep conditions from getting worse.

Here's what an instream flow rule *does not* do:

Does not require that water be put in streams to increase stream flow.

Does not guarantee water will be in the stream to meet instream flow levels.

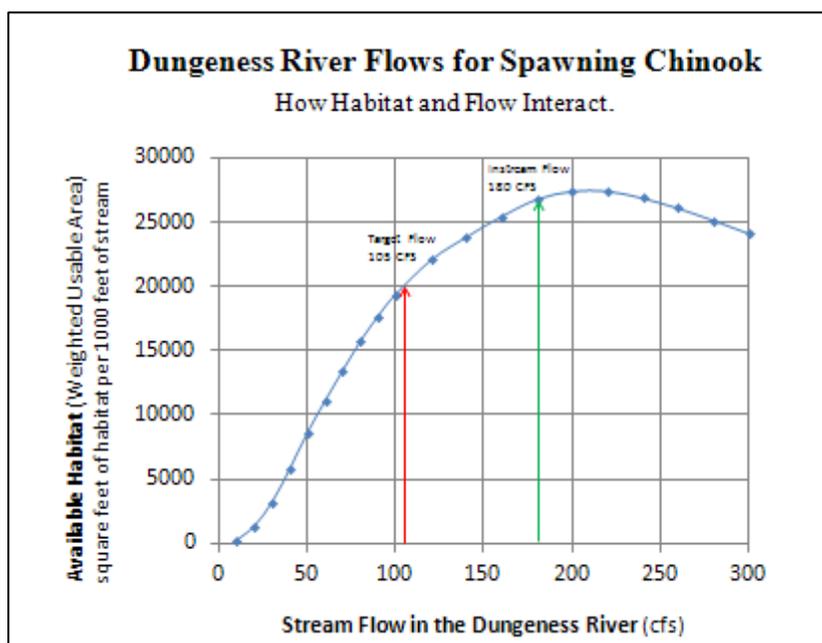
Does not impact existing (senior) water rights, including small household wells. (Actually quite the contrary, instream flows protect existing water rights from new withdrawals.)

There has been concern voiced about the proposed instream flow levels of 180 cfs for the Dungeness River during the naturally dry period of August through October. The level is criticized both as too high and too low. Those who say 180 cfs is too high often argue that this amount of water is never there. Others say the number is too low, and is not protective enough for fish and other resources and uses that depend on adequate water in the river.

Restoration target flows

Under a separate process, setting *target flows* to restore Dungeness River flows has been agreed to by local leaders. Restoration efforts are complementary to, but not part of, the proposed water management rule. Flows of 105 cfs in late summer will take some years and a number of voluntary actions by water right holders to build up. Target flows are discussed briefly at the end of this publication.

How flow numbers are determined: the science of fish and flows



The recommended Dungeness River instream flows are based on computer models that take into consideration flow, channel shape, water velocity, side channels, salmon biology, and usable stream habitat area. Instream flow studies quantify how fish habitat changes with the amount of stream flow. (*Habitat* refers to *living space*, and more habitat generally equals more fish. See Figure 1 at left.) Flows based on fish habitat are often assumed to cover the needs of other instream uses. Recommendations from fish biologists plus future water needs of people are then considered when rules are drafted.

Figure 1. Fish habitat increases as flows increase. Setting flows at 180 cfs during the summer spawning period follows Washington's anti-degradation standard and protects existing fish habitat from the impacts of new withdrawals.

More water=more habitat=more fish

There is general consensus in the scientific literature that more flow in the summer and fall results in more fish. Since the late 1940's, Washington studies have consistently found a one-to-one relationship between coho salmon survival and summer stream flows: the higher the flows, the higher the salmon survival. For example, studies on Bingham Creek in Mason County for 1980-1991 found increased summer flow (August/September) equaled more coho smolts (juveniles) migrating out the following spring.

(<http://www.ecy.wa.gov/programs/wr/instream-flows/isfrs.html>)

The Dungeness River is home to four fish species under the protection of the federal Endangered Species Act (ESA) as well as several other fish species. Stream flows during the critical low-flow months of summer/fall have been identified as an important factor in both the decline and future recovery of these populations.

Protecting the occasional “good water year” during the summer is needed to preserve a healthy population of fish or aid in recovery.

Instream flows will sometimes be higher than flow in the stream

You are not alone if it seems counter-intuitive to set flow levels with the understanding that they will not always be met. The amount of water in the stream is considered when determining instream flow numbers, but flows cannot be based solely on existing levels. An instream flow is not the lowest amount of water that has occurred in the stream according to stream flow records, or even the average flow. Setting stream flow levels in rule does not require anyone to put water in the stream to achieve the instream flows. Instream flows are simply a regulatory number – a threshold -- used to draw a line to determine when there is water available for new withdrawals that will not hurt fish or other instream resources. They are the levels that will be protective of fish and fish habitat when those levels are in the river.

If an instream flow was set at a low number so it could always be achieved during summer, then we could expect the salmon population to drop as new water uses reduced stream flows. Available habitat would shrink and water temperatures rise. And eventually habitat and the fish population would be severely reduced. State law is clear that instream flows must be set at levels that protect and preserve fish and other instream values over the long-term. This “anti-degradation” standard has been confirmed in State Supreme Court rulings.

If the instream flow number is higher than the average flow in the stream in summer, this does not mean that the instream flow number is wrong. Rather it is a red flag signaling that the fish have barely enough water to survive, and withdrawing water for new uses would reduce their survival numbers even more.

Dungeness River flows naturally reach 180 cfs and above in some summers

For the Dungeness River, an instream flow level of 180 cfs in August through September has been determined as the level that will help support healthy fish runs and protect and preserve other instream resources. As described above, instream flows are not set with the expectation those flows will necessarily

be in the river. But it is interesting to note that in recent years, the river was above 180 cfs for most of the dry months (see Figure 2). This data supports that 180 cfs is within the normal range of the river.

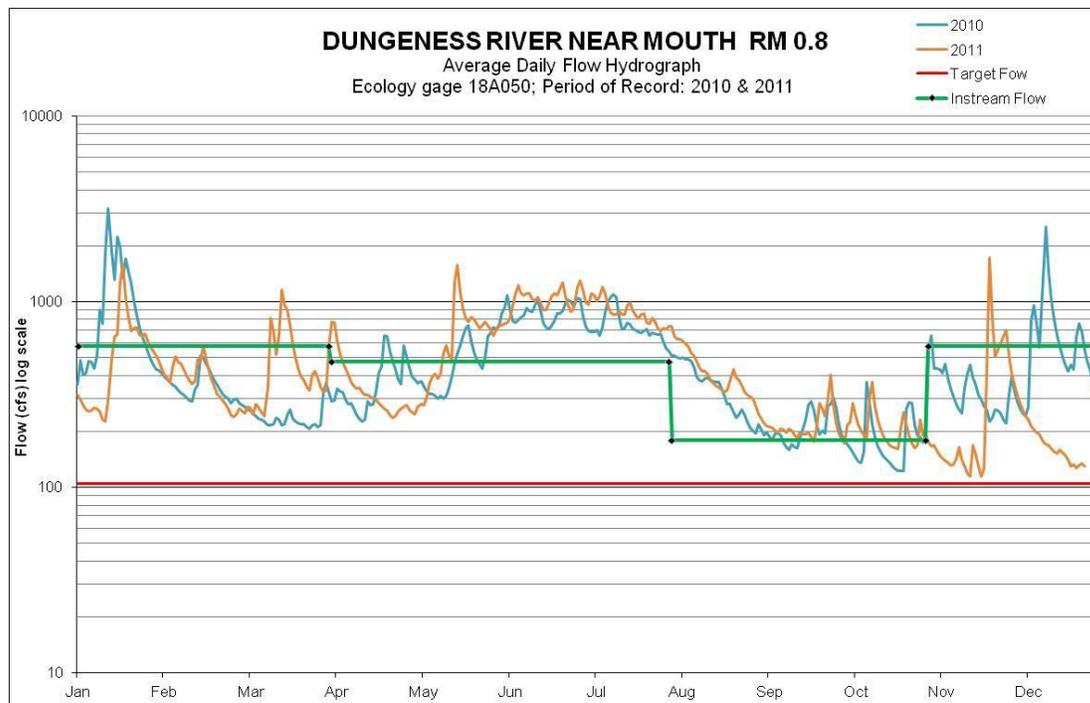


Figure 2. A hydrograph showing Dungeness River flows over the past two years. The solid green line in the middle is the proposed instream flows, which drop in August through October, following natural seasonal variation. But as this data shows, stream flows (the jagged lines) have often been above the proposed 180 cfs in recent years. The solid red line slightly above 100 cfs is the target restoration flow of 105 cfs.

Target flows and Dungeness River flow restoration

Setting and adopting instream flows by rule is a separate but complementary effort to *restoring* flows. *Target flow levels* are used as restoration goals and are not legally binding -- so they are not part of the Dungeness water management rule.

The Dungeness mainstem is a flow restoration priority of the Local Leaders Water Management Work Group (LLWG), as well as many local salmon recovery efforts. Flow restoration projects in the Dungeness watershed, such as piping leaky irrigation ditches, have allowed farmers to divert less water and thereby improve stream flows and habitat. Other important projects for salmon are being done to restore floodplains, remove barriers and constrictions and add large woody debris.

A late summer season restoration flow for the Dungeness River of 105 cfs has been affirmed as an informal target flow by the LLWG. In this case, target flows are a goal that local leaders and other agree to work towards to improve late season flow levels.

Significant effort and expense has already gone into conserving water, restoring flows and salmon recovery in the Dungeness basin. Establishing stream flow protections will help guard these investments.