

## **STREAMFLOW RESTORATION PRIORITY AREAS**

### ***Synopsis***

The Water Resources Department and the Department of Fish and Wildlife jointly identified priority areas for streamflow restoration in basins throughout the state. These priority areas represent watersheds in which there is a combination of need and opportunity for flow restoration to support fish recovery efforts under the Oregon Plan for Salmon and Watersheds. WRD is focusing its efforts under the Oregon Plan on these priority areas.

### ***Background***

The Oregon Plan includes two interrelated measures—WRD 6 and ODFW IVA8—for establishing priorities for streamflow restoration. The measures are included in the Oregon Coastal Salmon Restoration Initiative (CSRI) submitted to the National Marine Fisheries Service in March 1997. Similar measures also are included in the Steelhead Supplement which was submitted in February 1998. Under the measures, the Water Resources Department (WRD) is responsible for evaluating deficits in streamflows for instream water rights and the Department of Fish and Wildlife (ODFW) is responsible for prioritizing the areas where fish habitat is most dependent on restoration of streamflows. Appendix 1 contains the full text of the two measures.

WRD and ODFW staff worked closely in developing the methodology for identifying streamflow restoration priorities in the five major coastal basins included under the CSRI.<sup>1</sup> ODFW developed and implemented a process to identify the watersheds in which fish were more likely to respond to increased flows. WRD identified those watersheds in which there are the best opportunities to restore flows. The rankings of expected response by fish and of opportunities for flow restoration were combined to produce the streamflow restoration priorities. A similar process was used by the agencies in establishing priorities for flow restoration in the remaining basins.

### ***Flow Restoration Needs Ranking***

ODFW used a process based on the Bradbury Prioritization Model<sup>2</sup> to identify the critical areas for protection and restoration. In applying the process, ODFW district biologists gathered information on the presence of fish resources, habitat integrity, risks to fish survival, and restoration potential for each water availability basin.<sup>3</sup> These factors were combined to produce a

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<sup>1</sup> These basins are the North Coast, Mid Coast, South Coast, Umpqua and Rogue.

<sup>2</sup> The model was developed by a team of scientists to provide a framework for prioritizing restoration work. The team was coordinated by the Pacific Rivers Council at the request of Senate President Bill Bradbury.

<sup>3</sup> A water availability basin is the watershed unit used for the Department's water availability calculations. There are more than 2,500 water availability basins in the state. The WAB delineations used in the prioritization project are those in use in April 2000 may vary from more recent coverages in some basins.

biological rank by season<sup>4</sup> for each water availability basin. Appendix 2 provides a detailed list of the factors included in the biological ranking.

WRD used the water availability model<sup>5</sup> to determine the number of months during which instream water rights are not met at least 50 percent of the time. As staff began the prioritization process, they concluded that, in addition to instream water right deficits, the percentage of natural flow consumed by water uses in each water availability basin would provide an indicator of the extent to which fish were negatively affected by reductions in streamflows. WRD also used the water availability model to develop and to provide ODFW with these data.

The combination of the biological ranking, data on instream deficits and water use, and biologists' judgements of the potential for fish recovery if water was restored yielded a value reflecting the need for flow restoration during each season in each WAB. These values were divided into the following four classes: Low, Moderate, High and Highest.

### ***Flow Restoration Optimism Ranking***

WRD developed a process to include input from WRD watermasters in the prioritization process. Based on their expertise and knowledge of local conditions, the watermasters evaluated a variety of factors in developing a flow restoration opportunity ranking for each water availability basin. These factors included streamflow conditions in each water availability basin and the presence of stored water for which the water availability model does not account.<sup>6</sup> Additionally, watermasters considered the distribution and nature of water uses within each of the water availability basins to better identify the areas in which there are opportunities for streamflow restoration. Finally, watermasters considered which of the alternatives for achieving flow restoration likely would be available and useful in each of the water availability basins. Appendix 2 provides a detailed list of the factors used in the flow restoration opportunity ranking.

The combination of these factors yielded a value reflecting the opportunity for flow restoration during each season in each WAB. These values were divided into the following four classes: Poor, Fair, Good and Very Good.

### ***Flow Restoration Priorities***

After ODFW staff had completed ranking based on the need for flow restoration and WRD staff completed the restoration opportunity ranking, the district biologists and the watermasters in

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<sup>4</sup> The seasons used in the streamflow restoration prioritization are based on the life history of salmon. The seasons are as follows: Winter (December through March), Spring (April through June), Summer (July through September), and Fall (October and November).

<sup>5</sup> The water availability model provides a method for WRD to determine if there is sufficient water available to allow new appropriations through the issuance of permits.

<sup>6</sup> Because the water availability model was designed to determine whether new appropriations of natural flows could be granted, the model does not provide estimates of the quantity of water in streams resulting from the release of stored water.

each of the basins reached agreement on how these rankings would be combined to yield the streamflow restoration priorities. These agreements varied by basin depending on the district biologists' and watermasters' professional experience and judgement regarding the areas in which flow restoration activities were likely to be most effective. Work on establishment of priorities for the five Coastal Basins (North Coast, Mid Coast, South Coast, Rogue, and Umpqua) was completed in 1997.

In 1999, the Oregon Watershed Enhancement Board agreed to fund completion of a statewide assessment of streamflow restoration needs. WRD and ODFW staff reviewed the prioritization process and made necessary modifications to adapt the process to non-coastal basins. In early 2002, the agencies completed the prioritization for basins throughout the state.

In the non-coastal basins for which work was completed in 1999, WRD identified two levels of priorities. The watersheds with the most highest needs and best opportunities for flow restoration were designated as "Current Resource Priorities." These are areas in which WRD has sufficient resources to actively pursue streamflow restoration. Other areas in which restoration was judged to be a priority were designated as priorities in which WRD would work to secure additional resources needed for flow restoration work.

### **Next Steps**

ODFW and WRD staff currently are working with local watershed councils to provide information on the flow restoration priorities and to gain additional input on the priorities. Many of the alternatives for restoring streamflows will require voluntary local actions. The assistance of the councils will be essential in pursuing these measures. In addition, watermasters are annually identifying the activities in which they can engage in pursuit of streamflow restoration.

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## Appendix 1

### OREGON PLAN MEASURES

#### ***Coastal Salmon Recovery Initiative, March 1997***

##### ***WRD 6:*** Identify Unmet Instream Flow Needs

By June 1, 1997, WRD shall determine the months during which the ISWRs are not being met and shall quantify the monthly deficit by stream reach as indicated by current measurement data or water availability modeling.

##### ***ODFW IVA8:*** Identify Instream Flow Priorities

By October 1, 1997, ODFW will prioritize the areas where fish habitat is most dependent on restoration of streamflows, and will establish a schedule for annual incremental restoration of flows over time in cooperation with WRD.

#### ***Steelhead Supplement, February 1998***

##### ***WRD S-6:*** Identify Unmet Instream Flow Needs

WRD shall complete an evaluation of water availability to determine the months during which the instream flow needs of steelhead are not being met and shall quantify the monthly deficit. Information will be provided for all water availability basins within each ESU according to the following schedule:

- Oregon Coast & Klamath Mountains Province ESUs (Coastal basins) - Completed
- Southwest Washington, Lower Columbia River (Willamette and Sandy Basins),  
& Upper Willamette River ESUs - August 1, 1998
- Lower Columbia River (Hood Basin), Middle Columbia River & Snake River  
Basin ESUs - October 1, 1998

By February 1, 1998, WRD and ODFW will mutually determine the types of information and analysis necessary to characterize the unmet instream flow needs for each water availability basin in the ESUs. The analysis for water availability basins without ISWRs will be generally similar that for water availability with ISWRs, and will be based on available information and may use relationships or conversion factors derived from stream reaches with ISWRs to estimate flow needs and unmet flow levels.

##### ***ODFW IV A 8:*** Identify Instream Flow Priority

ODFW will identify streams where quantity of flow is limiting steelhead production and establish priorities for obtaining new ISWRs. ODFW will identify and prioritize the areas where

steelhead habitat is most dependent on restoration of streamflows according to the following schedule:

Oregon Coast, Klamath Mountains Province, and Southwest Washington ESUs -  
September 1, 1998

Lower Columbia River, Middle Columbia River, Upper Willamette River, and  
Snake Rivers Basin ESUs - January 1, 1999

ODFW and WRD will establish a schedule for annual incremental restoration of flows over time as the targets for streamflow restoration measures according to the following schedule:

Oregon Coast, Klamath Mountains Province, and Southwest Washington ESUs -  
February 1, 1998

Lower Columbia River, Middle Columbia River, Upper Willamette River, and  
Snake Rivers Basin ESUs - March 1, 1999

Watershed councils will review the prioritized areas, amounts of flow restoration and the schedule and provide comments to ODFW and WRD according to the following schedule:

Oregon Coast, Klamath Mountains Province, and Southwest Washington ESUs -  
July 1, 1998

Lower Columbia River, Middle Columbia River, Upper Willamette River, and  
Snake Rivers Basin ESUs - July 1, 1999

## Appendix 2

### FACTORS INCLUDED IN BIOLOGICAL RANK

#### **Fish Resources**

- Number of Native Salmon Species
- Core Area
- Other Fish Benefits
- Ecological Benefits

#### **Habitat Integrity**

- Physical Habitat Condition
- Human Influences and Development Pressure
- Water Quality (especially temperature and dissolved oxygen)

#### **Risk**

- Sensitive, Threatened, Endangered or “Plan Species”
- Instream Flow Protection
- Natural Low Flow Problems

#### **Physical Habitat Restoration Potential**

- Physical Habitat (instream structure, complexity, etc.)
- Human Influences (upslope landscape, watershed, etc.)
- Water Quality

### FACTORS INCLUDED IN OPPORTUNITY RANK

#### **Water Availability**

- Presence of Stored Water
- Other Anomalies in the Water Availability Model

#### **Nature of Uses**

- Type
- Size
- Value

#### **Alternative Strategies**

- Leases and Transfers
- Regulation and Distribution
- Conservation and Elimination of Waste
- Water Measurement