

Partnership for Water Conservation

The Partnership for Water Conservation (Partnership) has passed another milestone in its development. Last month Bill Elder came on board as the organization's first Executive Director.

Eight of the fifteen seats on The Partnership's Board of Directors have been filled and the rest soon will be. Five Board Members represent each of the organization's three constituent Caucuses— Environmental, Utilities and Local Government, and Business and Ratepayers. (Those interested in being considered for Board service should contact Bill for further information.) General membership packets are being circulated and Bill is getting out on the recruitment trail.

The Partnership for Water Conservation is no longer just a good idea, a vision for a coming together of environmentalists, businesses, and water suppliers in Snohomish, King, and Pierce Counties around the issues of increased water efficiency and the health of our communities. It is a functioning reality. The Partnership moves forward into '05 developing programs to implement that vision. We invite like-minded groups and individuals to join with us.

For more information contact Bill Elder 206.799.6576,
director@thepartnershipforwaterconservation.org.
The Partnership will soon have its website operational at
www.thepartnershipforwaterconservation.org.

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Central Puget Sound Water Suppliers' Forum
www.cityofseattle.net/forum

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FORUM WEBSITE

www.cityofseattle.net/forum

The Forum publishes WaterLink to keep you informed of our activities in the arena of water supply planning, environmental stewardship and legislative activities.

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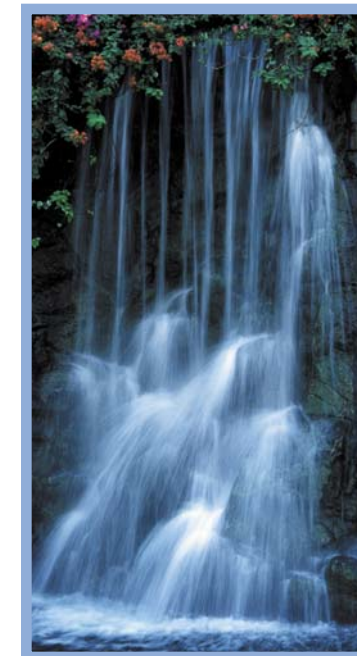
Your Link to Central Puget Sound Water Supply News

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Advances in Fish Passage Seattle and Tacoma See the Progress of Two Projects

INSIDE:

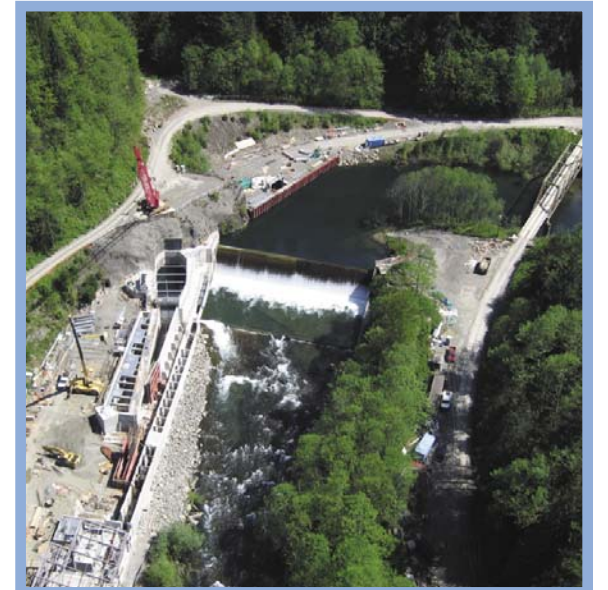
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Central Puget Sound Water Suppliers' Forum members are dedicated to improving fish passage above dams. Together, two local projects overseen by Seattle Public Utilities and Tacoma Water have the potential to open more than 117 miles of anadromous fisheries habitat in Puget Sound watersheds.

Tacoma Headworks Fish Facilities

Tacoma's Headworks diversion dam was constructed on the Green River in 1911, three and a half miles downstream of the eventual site of the US Army Corps of Engineers' Howard Hanson Dam (HHD). Tacoma Water's facility was the first complete barrier to adult salmon and steelhead in the Green River, and eliminated anadromous fish production in the upper watershed. The completion of HHD in 1962 created a further barrier to upstream passage and essentially isolated approximately 220 mi² of watershed area (45% of the entire Green River watershed). Since most of the headwater streams in the upper watershed are otherwise unconstrained by levees or dikes, opening this area with a fish passage facility at the Headworks/HHD complex is expected to restore significant anadromous fish habitat.



Tacoma Headworks Fish Facility, April 2004. The fish ladder is the long boxy structure paralleling the river to the left of the dam.

were concerns about the height of the 235 foot dam, as well as reservoir level fluctuations and stress on migrating fish.)

The Headworks fish ladder and trap and haul facility will be completed and tested by the end of 2004. The trap and haul facility operates by guiding adult fish through an electronically controlled gate where they are sorted, identified, and held in holding ponds. They are then transferred into a specially outfitted truck using a method that does not require handling of the fish and hauled above HHD where they are released. The Muckleshoot Indian Tribe and WDFW are co-managers of Green River fish and wildlife resources; together with NOAA Fisheries and USFWS, they are evaluating the reintroduction of anadromous fish into the upper watershed. They will be determining how many and which species of fish should be considered for reintroduction to the upper watershed. The date that the trap and haul facility will begin operations has not yet been determined and is dependent upon fish management decisions by these entities.

Currently, Tacoma Water is near completion of the new fish passage facility, referred to as the Tacoma Headworks Fish Facility, consisting of upstream adult passage at Tacoma Headworks and Howard Hanson Dams, and downstream juvenile bypass at Howard Hanson Dam and the Tacoma Diversion.

Upstream Adult Passage

The upstream adult passage operation includes a fish ladder at the Tacoma diversion combined with a trap-and-haul operation to pass adult fish from the Headworks to above HHD. In addition, the channel downstream of the Headworks diversion dam has been reshaped to attract fish to the ladder entrance. (A fish ladder at Howard Hanson Dam was also considered, but there



(continued from front)

Downstream Fish Passage

The objective of the juvenile bypass at the Headworks diversion and HHD is to allow fish to safely bypass the dams on their way downstream. Tacoma has modified the existing Headworks diversion to safely bypass fish downstream below the diversion, and to eliminate the potential for fish to enter the Headworks intake. At HHD, the juvenile bypass strategy has not yet been completely developed. The current plan under consideration is to remove juveniles above the dam in a hopper and transport them downstream either via flume or truck.

Landsburg Fish Passage Project

In the watershed just north of Tacoma's fish passage project on the Green River, the City of Seattle recently opened seventeen miles of anadromous fisheries habitat on the Cedar River. On September 19, 2003, the first Chinook passed upstream of Landsburg Dam, the City of Seattle's municipal water diversion and treatment facilities. This was potentially the first anadromous fish to access this reach in over 100 years.

Landsburg is the site of the City of Seattle's municipal water diversion and treatment facilities on the Cedar River. The Landsburg Dam was constructed in 1900, and up until the completion of the new fish passage facilities in September 2003, the dam blocked all anadromous fish migration to seventeen miles of high-quality stream habitat in the protected Cedar River watershed. The recently completed fish passage facilities are an important element of Seattle's Cedar River Watershed Habitat Conservation Plan (HCP), which has the goal of improving conditions for Chinook, Coho, and Steelhead migration. These fish passage improvements have the support of the WDFW, USFWS, and NOAA Fisheries. Other participants in the project include King County, Washington Department of Ecology, and US Army Corp of Engineers.

The objectives of the Landsburg Fish Passage Project are to allow access for all anadromous fish species in the Cedar River, except sockeye salmon (due to water quality and public health reasons), and to operate the downstream passage gate and intake screening facilities to safely pass downstream migrating fish while meeting HCP instream flow management requirements and municipal water needs. The Landsburg fish passage project includes four major improvements.



Seattle Public Utilities' Landsburg Fish Passage Project

The HCP Landsburg Fish Passage Project Includes:

- A new fish screen at the water supply intake
- Modifications to the dam spillway gates and plunge pool
- A fish ladder at the Landsburg Dam including fish sorting and holding facilities
- A second fish passage structure 1/2 mile downstream of the dam at Lake Youngs

An innovative approach was taken in creating fish passage at the Young Aqueduct crossing. The ladder at the aqueduct was created out of several rock drops across the river channel which form a series of cascades and pools, mimicking a natural river formation.

Summary

Plans to reintroduce salmonids into the upper watersheds of both the Cedar and Green Rivers have targeted reintroduction of coho, chinook, and steelhead. An estimated 4,500 coho and 1,000 chinook may return to the Cedar River above Landsburg, while an estimated 6,500 coho and 2,300 chinook may return to spawn in the upper Green River watershed. Efforts of Central Puget Sound Water Suppliers Forum members to improve fish passage above dams in Puget Sound watersheds are proving to be quite successful. Together, Seattle Public Utilities and Tacoma Water's work has the potential to open more than 117 miles of anadromous fisheries habitat for the first time in decades.

Update from the Forum's Environmental Stewardship Committee

The Environmental Stewardship Committee is currently addressing the Forum's role and position in identifying elements of environmental stewardship (ES) that can be addressed by the region's water utilities. The ES Committee is drafting an issue paper on the subject that:

- Defines ES vision, principles, and commitments
- Identifies activities that utilities can implement
- Evaluates source exchange possibilities
- Advances fish needs response during drought conditions
- Develops sustainable resource management BMPs
- Assists with measures to sustain salmon runs

Forum Research

Forum's Efforts to Improve Streamflow Forecasting in the Central Puget Sound

In our Spring 2004 Issue of WaterLink we reported on the Forum's work with the University of Washington to develop improved streamflow forecast tools for a number of rivers in the Puget Sound area. Utilizing these flow forecasts in assessing the impacts of alternative reservoir operations on fish egg survival in these rivers is also being addressed.

Streamflow Forecasts

To date, researchers at the UW have developed and calibrated rainfall/snowmelt/runoff models for the mainstem portions of the Tolt, Cedar, Green, and Sultan watersheds. As part of the modeling effort, water balances were maintained throughout the basins and sub-basins, on an annual, seasonal, and monthly basis. Particular attention was paid to modeling the snow pack in the basin. The models were created to simulate streamflow at a three hour time-step using the Distributed Hydrology and Soils Vegetation Model (DHSVM). A calibration and verification report is currently being prepared.

Climate Forecast Evaluation

This project also involved the evaluation of climate forecasts produced by the National Center for Environmental Prediction (NCEP). Research to date confirms that the temperature forecasts that are provided by NCEP are very useful in predicting the actual temperatures that will occur. Monthly correlation coefficients in the 90 percent range were common, suggesting that the NCEP forecasts can explain 90% of the natural variability. Precipitation forecasts were not as accurate, as was also expected.

Fish Egg Survival

Part of this project involves evaluating the use of river flow predictions to assess the impacts on salmon recruitment via the impact of flow on redd dewatering. Literature and data have been assembled that characterize how river discharge affects the percent of preferred spawning ground. A conceptual model linking river discharge to stock recruitment curves via the spawning area discharge relationship has been developed. The next step is to outline these relationships so they can be expressed in a probabilistic framework that is compatible with short-term climate model predictions.

Webpage Development

A webpage has been developed for the streamflow forecasts and it is being updated semi-monthly as new information becomes available.

<http://www.tag.washington.edu/project.html>

From the website, users can choose among a variety of river basins and different forecast periods. It is not anticipated that the system will be fully automated or that forecasts will be provided indefinitely. The goal of this website is to provide a framework that can be enhanced in the future if the forecasts prove valuable. The forecasts are currently presented as individual ensemble forecasts and as average ensemble values. This allows the user to compare the forecast to historical values and to consider the range of forecasts provided as shown in figure 1.

NCEP Forecast (type 3) for Total Flows into Spada Reservoir Initialized August 2004

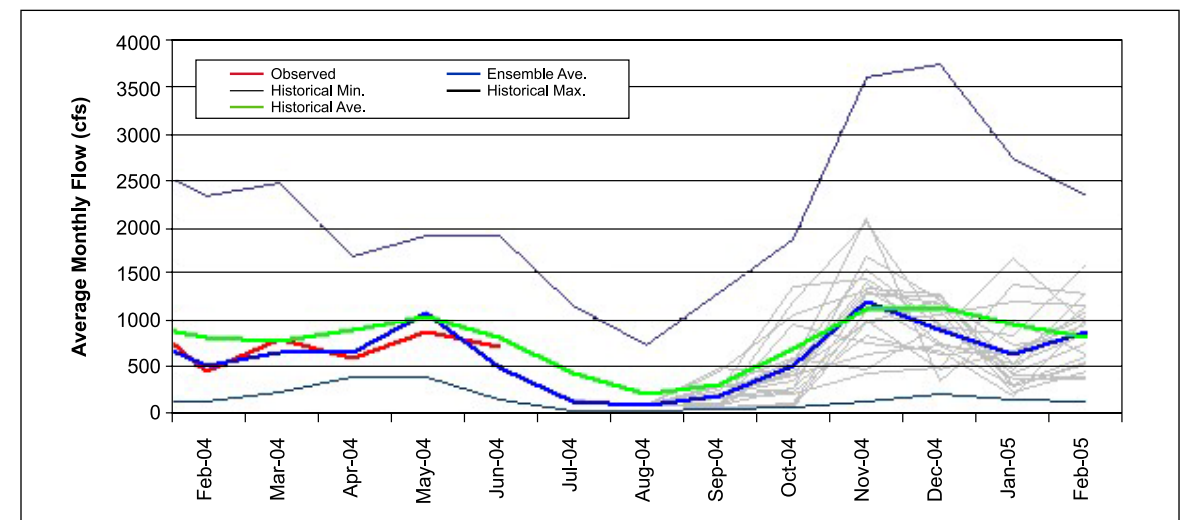


Figure 1 – August 2004, NCEP based forecast for Sultan River Inflows into Spada Reservoir between September 2004 and February 2005. Forecasted flows on the Sultan represent cumulative inflows to Spada Reservoir including flow from Williamson Creek, Elk Creek and the South Fork Sultan River.