

## **SYSTEM OPERATIONAL REQUEST: #2003-4**

*The following State, Federal, and Tribal Salmon Managers have participated in the preparation and support this SOR: U.S. Fish & Wildlife Service, National Marine Fisheries Service, Idaho Department of Fish and Game, Oregon Department of Fish and Wildlife, Nez Perce Tribe, Shoshone Bannock Tribe, Washington Department of Fish and Wildlife and the Columbia River Inter Tribal Fish Commission.*

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**FROM:** David A. Wills, Chairperson, Salmon Managers

**DATE:** March 26, 2003

**SUBJECT:** Operations at Dworshak Reservoir

**SPECIFICATIONS:** Operate Dworshak Reservoir to the highest elevation possible. Given the below average run-off volume, to the maximum extent possible, fill above local flood control elevation to save water for the spring juvenile salmonid outmigration. Utilize available space in other reservoirs to meet system flood control requirements.

### **JUSTIFICATION:**

As of 5:00 AM on 3-25-03, the COE increased outflows from the Dworshak Reservoir above the 1.5 kcfs minimum; at this time the reservoir was at an elevation of 1575.1 feet. The local March 31st flood control elevation for the Dworshak Reservoir is 1580.3. The present run-off volume forecast for the Snake River Basin above Lower Granite Dam is ranging between 14.7 to 16.6 MAF (March Final and March Mid-Month), which is only 68% to 77% of average. A more flexible operation of the Dworshak flood control operation could save water for the spring migration period, providing better downstream migrant flow conditions closer to the established Biological Opinion flow targets for salmon and steelhead juveniles. The present flood control operation carries risk of over drafting Dworshak reservoir and reducing the migration flow available for spring migrating salmon and steelhead, both listed and unlisted stocks. Flow and spill have been shown to be the most important variables in the survival of juvenile migrants and survival to adult (State, Federal, Tribal anadromous fish managers, NWPPC, January 2003). The mid-March unregulated runoff volume forecast of 16.6 MAF is indicating that the minimum flow target for the Snake River of 85 kcfs may not be met, which jeopardizes in-river passage

conditions. Continuing analysis of smolt transportation data supports the spread-the-risk management of in-river and transportation of downstream migrants. Transportation studies for wild spring/summer chinook and steelhead have shown little to no transport benefit in most years, 1995-2000 (Bouwes et al. 2002; NMFS presentation to the Technical Management Team, March 18-19, 2002; State, Federal Tribal anadromous fish managers comments to NWPPC, January 2003). Adequate flow appears critical even for transported juveniles in the migration to and through Lower Snake River reservoirs. Flood control operations in a below average runoff year, should have the flexibility to preserve as much water as possible for in-river downstream migrants, specifically to meet the minimum flow target for the Snake River.

Alternative analyses are available that illustrate a potential range of flexibility in meeting system flood control, which would allow additional water storage in Dworshak reservoir for release later in the spring. As an example, an alternative analysis utilizing Water Supply Forecast Correction Curves (Martin 2003) indicate that there is additional flexibility in Dworshak Reservoir flood control operations that could be implemented to benefit downstream migrant anadromous fish during the spring period.

Using Water Supply Forecast Correction Curves (Martin 2003) and the COE's official forecast for Dworshak (1790 Kaf, March 1<sup>st</sup> Final), which gives a "corrected" forecast of 1640 Kaf, the analysis shows that 255 Kaf of flood control space will be needed at Dworshak by March 31<sup>st</sup>, 2003. This volume of water would lead to a March 31<sup>st</sup> URC elevation 1586 feet. About 104 Kaf of reservoir additional water could be stored between the elevations of 1580 and 1586 feet at Dworshak.

To offset this loss in system flood control, calculations, as of March 26, have shown there to be 80 Kaf of flood control space available at the Brownlee Reservoir, 1730 Kaf of flood control space available at Libby, and 940 Kaf available at Hungry Horse, all totaling 2750 Kaf of extra system-wide storage. Perhaps available storage space in these and other reservoirs in the United States and Canada can be taken into account in this year's system flood control management. Any change in Columbia River operations should minimize flow fluctuations in the Hanford Reach to minimize juvenile stranding.

NMFS was consulted on the existing flood control operations in the 2000 FCRPS Biological Opinion and recommended studies to modify flood control, to benefit the Columbia River ecosystem, including salmon. (Actions 35, 36). The Opinion establishes the need for and recognizes the potential benefit to meeting and enhancing fish migration conditions through additional flexibility in flood control management. Among a number of purposes, the intent of these studies is to reduce the effects of flood control operations on the spring freshet while achieving a high probability of reservoir refill. Potentially much higher spring flows can occur in average and below average runoff years while maintaining high levels of protection from damaging floods in high runoff years. These studies have not yet been completed. Thus, in the interim, the salmon managers are interested in any flexibility in this year's flood control operation that could help meet the intended purposes of the above recommended studies.

Reference:

Martin, K. 2003. Water Supply Forecast Correction Curves. CRITFC Science Reports  
([http://www.critfc.org/tech/03-forecast\\_report.html](http://www.critfc.org/tech/03-forecast_report.html))