

## **SYSTEM OPERATIONAL REQUEST: #2000-16**

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

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**FROM:**        *Marv Yoshinaka*  
                  **Marv Yoshinaka, Chairperson, Salmon Managers**

**DATE:**        **April 26, 2000**

**SUBJECT:**    **Spill at Little Goose Dam**

**GOAL:**        To provide additional spill at Little Goose Dam to improve migration conditions for in-river smolts and provide a more equitable distribution of fish for implementation of the spread-the-risk policy.

**SPECIFICATIONS:** Implement 24-hour spill to the gas waiver at Little Goose Dam, effective immediately.

### **JUSTIFICATION:**

The state, federal and tribal fishery managers have established a long-term policy of spread-the-risk as a fundamental basis of implementing the spring migrant transportation program. This was established after years of implementing the transportation program as a fish passage management strategy based on transport benefit ratios (TBRs). The fish transportation program continued as stocks declined and eventually were listed under the Endangered Species Act. Several reviews of the historic data raised doubts on the magnitude of the benefits associated with the fish transportation program. The spread-the-risk policy was developed to address the uncertainty surrounding the overall benefits of the transportation program and the specific uncertainty that continued transportation will lead to the recovery of listed stocks.

Life cycle analyses indicate a low probability of recovery of listed stocks based on smolt to adult return information from transported fish. More recent data and analyses indicate that the benefits of transportation are most likely limited to the avoidance of

cumulative passage through dam bypass and collection systems. Recently conducted studies have emphasized the use of fish that have not passed through bypass and collection systems as “true” controls against which to measure the benefits of transportation. Data collected from these studies indicate that in-river fish migrating through a combination of turbine and spillway passage have smolt to adult return ratios similar to the transported groups.

For some groups of fish, transportation appears to be detrimental. Recent information suggests that the earlier migrating stocks transported in April may not return at as high a rate as do stocks that migrate later in May. This is particularly troubling given the genetic concerns expressed by Mundy et al., 1994; page 114.

“The potential for transportation to induce genetic effects on salmon populations is substantial. The most likely effects would be a reduction in overall genetic diversity; however, this might also be accompanied by changes in the mean values of heritable traits, such as run timing, or smolt and adult sizes. Reductions in genetic diversity are likely to decrease fitness (i.e. productivity) of affected stocks and increase the likelihood of population extinction.”

Given the significant uncertainty of the effect of transportation, the spread the risk policy is the most prudent approach to passage management at this time. It is estimated that the current NMFS operation for the Snake River will result in the transportation of 79-83% of the chinook and 85-89% of the steelhead migrating in 2000. The present operations include 20% spill for 24 hours at Lower Granite Dam (for surface bypass collection research); 12-hour spill to the gas cap at Little Goose Dam; and, 24-hour spill to the gas cap at Lower Monumental Dam. (The range reported above is dependent on the assumption made for spill efficiency.) Changing spill to 24 hour spill to the gas cap at Little Goose Dam would reduce the percentage of chinook transported to 71-76% and to 78 –83% for steelhead (Attachment 1). In order to have the most significant effect on the proportion of fish transported this recommendation should be implemented immediately. The implementation of 24-hour spill at Little Goose Dam will improve passage conditions for in-river migrants (i.e., fewer fish using turbine passage and more fish using spill passage) and will still result in the transportation of the majority of fish during the spring migration.