

**LAKE CHELAN RELICENSING  
ENTRAINMENT WHITEPAPER  
December 20, 2001**

**DRAFT**

**Issue**

Entrainment of Lake Chelan native salmonids (Westslope cutthroat trout (WSCT) and bull trout) into the project intake is an issue that has been raised as a concern by some participants in the Lake Chelan relicensing process.

**Background**

The Washington Department of Fish and Wildlife (WDFW) has developed policy and regulations that require water diversions in Washington State be screened to prevent fish entrainment. Fish entrained at unscreened diversions can suffer high mortality due to direct project impacts i.e., descaling, blade strike, irrigation removal, and indirect project impacts, such as predation. The Lake Chelan Project currently has trashracks with vertical bar spacing of 2-9/16 inches. Monitoring was conducted (Chelan PUD, 2001) to determine the presence/absence of native salmonids near the Project intake. No fingerling size (60 mm; ~2.36 in.) salmonids were captured during the study. Of the salmonids captured during the study, only one was a WSCT (length-170mm; ~ 7 in.), and the remainder were catchable size rainbow trout (length-185-330mm; ~ 7-13 in.) stocked via Chelan PUD funding (as mitigation for potential losses at the Project due to entrainment). Additionally, water velocity passing the trashracks is very low, 0.6-1.2 feet/sec. All life stages of all species present near the project intake are able to escape these velocities based on swimming performance data. The data collected during the 2001 monitoring indicate that entrainment is not a significant issue at this time. NSWG members, however, recognize that in the future, as non-native fish are replaced with native salmonids, entrainment could become an issue.

**Discussion**

The Natural Sciences Working Group (NSWG) is addressing entrainment within the Lake Chelan relicensing process, specifically in the Chelan River Comprehensive Management Plan (CRCMP). The NSWG is currently in the process of developing language to address the entrainment issue in the CRCMP. Proposed to be included in the CRCMP:

Currently, WDFW anticipates the need to satisfy excluding salmonids of fingerling size or larger from the Project intake. The NSWG proposes to conduct additional entrainment monitoring, with input from the FAC, to determine if installation of new fish exclusion structures is necessary. The FAC will be involved in reviewing additional entrainment monitoring, and will provide design recommendations of appropriate fish exclusion structures, if necessary. If future entrainment studies indicate that native salmonids are being entrained and impacted by the Project, then Chelan PUD will redesign and replace the existing trashracks with appropriate fish exclusion structures designed to exclude the size of native salmonids being entrained.

The language being proposed in the CRCMP is based on discussions within the NSWG that included the following understanding among participants:

- Continue monitoring using the same techniques as the 2001 monitoring, but at lower level of effort (4-6 week April-May sampling period during peak WSCT migration).
- Conduct monitoring in future years as appropriate to accomplish determination of the need for fish exclusion structures in a timely manner and to accommodate design and installation of such structures, if necessary, prior to 10 years from the issuance of a new license. The NSWG anticipates that up to 4 years of monitoring may be required to determine the level of entrainment into the Project intake.
- At this time, the NSWG anticipates that replacing existing trashracks with smaller bar spacing, if necessary, may be the appropriate fish exclusion structures for the size of native salmonid being entrained.
- The intent of this activity is to determine the need for fish exclusion structures and, if necessary, design and install within 10 years from the issuance of a new license.
- Chelan PUD will continue funding for fish stocking until fish exclusion structures are installed. Current funding for fish stocking is mitigation for potential entrainment.

### **Conclusion**

The intent of this whitepaper is to clarify the sideboards of the entrainment discussions within the Natural Sciences Working Group under which the proposed language in the CRCMP was developed. Relicensing participants and Fishery Advisory Committee members must be aware of these sideboards during future discussions of entrainment investigation monitoring results and appropriate trashrack replacement design, if trashrack replacement is deemed necessary.