

**MEMORANDUM FOR THE RECORD 20-IHR-01**

**SUBJECT:** Two clipped juvenile steelhead mortalities during unwatering of the Ice Harbor Dam upper south fish ladder, for annual inspection and maintenance.

- A. Species – *Oncorhynchus mykiss*.
- B. Origin – Unknown.
- C. Length – Approximately 12”
- D. Marks and tags – None observed.
- E. Marks and injuries found on carcass – None seen.
- F. Location – Inside the south fish ladder, where the ladder comes down to tailwater level.
  
- G. Cause and time of death – On January 7, two people on creepers directed straggling fish down the upper fish ladder to tailwater level. The upper diffuser was set to provide approximately 4” of water flowing through the orifices, which is adequate flow to prevent fish stranding on the concrete floor of the ladder. The tailwater elevation was approximately 339.5’ while fish were being evacuated. At this elevation, one section of grating (diffuser #7) between the stationary weirs was above the water level. The Fish Biologist was monitoring this section of the fish ladder from the parking lot above, and attempted to push two stranded clipped juvenile steelhead past the exposed grating, using a long-handled net. Unfortunately, he could not get enough leverage to push the fish past the grating. When the people on creepers arrived, they got the fish to tailwater, but the fish did not revive.
  
- H. Future and preventative measures – When the tailwater elevation is 341.0’ or greater, there is no exposed diffuser grating for fish to get stranded on. However, the tailwater elevation is variable, based on river flows and water management needs. The upstream four sections of grating are covered with metal plates to provide additional attachment points for adult lamprey. Covering the next grating section downstream (diffuser #7) with plates would prevent fish from becoming stranded on grating unless the tailwater elevation dropped below 339.0’. However, diffuser #7 should be tested and opened all the way during the next high-water event to determine if it helps to bring the junction pool velocity into criteria, before deciding to cover it with plates. Until that decision is made, the plan is to have personnel stationed in the ladder at exposed diffuser grating sections during the next south ladder fish evacuation.
  
- I. Pictures included – none.

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