

**MEMORANDUM FOR THE RECORD: 22 LWG 10 Change in Ladder Cooling Pump Operation****SUBJECT: Change in Ladder Cooling Pump Operation**

During the 2021-2022 maintenance season the orientation of the fish ladder temperature control pumps was reconfigured. Pump 1 was returned to its historical position to provide direct supply into the fish ladder exit channel and pump 2 remained tied into the exit shower (Laughery's Shower). Earlier this season, spring Chinook were observed jumping in the exit pool and seemed to be holding in the upper section of the ladder. Two adult Chinook jumped out of the ladder at that location and were reported in MFR 22 LWG 09. As the fall run picked up, Chinook salmon again appeared to be holding in the ladder exit pool. September 11, adult trap personnel notified the Project biologist the adult trap return channel drain screen was clogged. Trapping was suspended while the Corps biologist flushed the trap and evaluated the issue. While flushing the trap, biologists noted a higher number of Chinook mortalities than usual. While it was not immediately clear if pump 1 was directly related to fish observed in the trap, the Project biologist judge it prudent to request that the Operator remove pump 1 from operation at 0833 September 11. The adult trap was flushed from 0927-1017 hours. Mortalities removed from the recovery and return pools are listed below. Adult trap operations were suspended from 0802 hours September 11 from 0650 hours September 12. Ladder temperatures at the exit pool and forebay exit (figure 1) and fish in the exit pool were monitored over the next several days.

- A. Species – Chinook and steelhead.
- B. Origin – There were 6 unclipped and 8 clipped Chinook mortalities and 2 unclipped and 2 clipped steelhead mortalities counted when the trap was flush. Additional mortalities were likely flushed out of the trap while draining the recover and return pools.
- C. Length – N/A
- D. Marks and tags – Adipose clipped.
- E. Marks and Injuries found on carcass – Carcasses were in different stages of decomposition.
- F. Cause and Time of Death – Unknown
- G. Future and Preventative Measures – Modify the temperature control system with pumps 2 and 3 supplying the exit shower. Modify pump 1 with an adjustable valve that distributes water across the channel and use when needed.

Sincerely,

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Figure 1. Lower Granite fish ladder exit pool (blue) and forebay (yellow) temperatures September 5-19.