

MEMORANDUM FOR THE RECORD - 24 MCN 02**SUBJECT: Modified Spill Operation**

The overloaded condition of McNary Dam spillway cranes and hoists limit their use until they can be replaced. As a result, Cranes 6 and 7 and seven of the 20 hoists can only be used twice every 12 months to move a double-leaf (full) gate, while 13 hoists cannot be used to move a double-leaf gate (See CENWW-EC PI Clarification and CENWW-EC 1130). Lifting the top leaf of the spill gates will not overload cranes and hoists, but this split-leaf spill for gates in the usual downstream gate slot would likely produce high total dissolved gas (TDG) levels and unsafe passage conditions for juvenile salmon. Moving gates to the upstream gate slot and operating in split-leaf configuration appears to produce more favorable passage conditions and this operation will be attempted spring of 2024. Split-leaf gates, however, cannot pass as much spill volume as double leaf gates so some gates will be retained in the downstream slot in double-leaf configuration to allow them to be fully opened if needed to accommodate high flows (See CENWW-EC FY24-004). If flow projections for spring 2024 indicate the risk for high flow events are sufficiently low, two of the closed downstream double-leaf gates (Gates 1 and 2) will be opened a set amount (using the first of two overloaded lifts per year) for the duration of the spill season so as to provide better passage conditions for juvenile and adult salmon in the tailrace of McNary Dam. The hydrologic criteria for the operation of spill gates 1 and 2 are described below (see 6 and 7). The operation modifications described here will alter the spill patterns from that in the Fish Passage Plan Table MCN-7. The intent is to spill to the 125% TDG spill cap, as described in the Fish Operations Plan, but it is possible that the 125% TDG spill cap may be different from previous years with the modified operation.

Below are the spillway operations for McNary Dam to be implemented in 2024.

1. Cranes 6 (Spill bay 6) and 7 (Spill bay 9) will be limited to two overload lifts per year.
2. Spill bays # 1 (T2¹), 2 (E7), 3 (E8), 5 (E15), 8 (E19), 15 (E17), 18 (T1) will be limited to two overload lifts per year. The remaining hoist cannot be used in an overloaded condition.
3. TSW's will be operated in the normal locations in spill bays 19-20 without modification.
4. Spill bays 1, 2, 3, 5, 8, 15, and 18 will remain closed in the downstream slot in the double-leaf configuration. Each gate will be fully opened, as needed, to pass high flows, using the first overload movement allowed each year. After the high flow event has ended, each gate will be closed, using the second overloaded movement allowed that year.
5. The remaining 13 spill gates and 11 hoists will be moved to the upstream slot and operated in the split-leaf configuration. The 11 gates operated by hoists will be adjusted hourly, as needed, to alter spill volume to accommodate changes in river flow. Two spill gates (#6 and #9) will be operated using cranes 6 and 7. These gates will be adjusted fewer times but at least once per week.
6. If lower flows are expected, spill gates 1 and 2 will remain in the downstream slot and opened to 4 stops (~7 kcfs spill) each and left in that position for the duration of the spill season based on

¹ Refers to original hoist number and manufacturer; Transco or Ederer.

the following hydrologic criteria:

- a. The Dalles April-August ESP-10 water supply forecast volume from the NWRFC is less than 90 MAF on 5 April, and
 - b. The STP forecast shows McNary inflows remaining below 350 kcfs through the spring freshet, and
 - c. Internal Corps system Flood Risk Management (FRM) analyses conducted weekly indicate a high probability of McNary inflows remaining below 350 kcfs through the spring freshet.
7. If higher flows are expected, spill gates 1 and 2 will remain closed in the downstream slot until needed to pass runoff based on the following hydrologic criteria:
- a. The Dalles April-August ESP-10 water supply forecast volume from the NWRFC is 90 MAF or greater on 5 April, or
 - b. The STP forecast shows McNary inflows peaking above 350 kcfs during the spring freshet, or
 - c. Internal Corps system FRM analyses conducted weekly indicate a high probability of McNary inflows peaking above 350 kcfs through the spring freshet.
 - d. Once the risk of inflows exceeding 350 kcfs has passed, and if spill gates 1 and 2 have not yet been opened, the gates will be opened to 4 stops each and left in that position for the duration of the spill season.
 - e. If spill gates 1 and 2 are needed to pass higher flows, the gates will be opened to a level that is expected to be sustained through the duration of the spring and early summer spill season based on the STP and ESP forecasts from RCC. Additional gates in the downstream slots will be used, as needed, as described in 4.
8. At the completion of early summer spill on July 31, or once spill is forecast to be 70 kcfs or lower for the remainder of the summer spill season, gates 1 and 2 will be closed by hoist, using the second of two overloaded movements allowed per year.
9. Interim Table MCN-8 with gates 1 and 2 closed and opened will be provided for inclusion into the FPP.

Potential impacts to fish passage from modified spill operations include altered forebay attraction (SPE and FGE) and tailrace egress conditions, which may cause longer juvenile travel times in the forebay and tailrace and reduced juvenile reach survival. Passage through split-leaf gate openings may cause physical injury. Estimated lower gas cap spill levels could produce increased PITPH. Poor tailrace flow conditions (eddy formation) may cause adult fish passage delays. Opening gates 1 and 2 (see 6 and 7 above) are expected to improve tailrace conditions for juvenile and adult fish.

- A. Species – Adult and juvenile salmon and steelhead
- B. Origin – NA
- C. Length – NA
- D. Marks and tags – NA
- E. Marks and Injuries found on carcass – NA
- F. Cause and Time of Death – NA
- G. Future and Preventative Measures –

Sincerely,
Chris Peery
NWW Fish Biologist