

SYSTEM OPERATIONAL REQUEST: #2020-4

WALLA WALLA DISTRICT

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FROM: Dave Swank, FPAC Chair

DATE: July 14, 2020

SUBJECT: Juvenile Transportation Date Change

OBJECTIVE: Change juvenile transportation resumption date from August 15th to August 1st, 2020 at Lower Granite and Little Goose dams, and suspend transportation collections at Lower Monumental Dam for the remainder of 2020.

SPECIFICATIONS

This SOR seeks to adjust juvenile transportation operations from those described in the 2019 - 2021 Spill Operations Agreement and in the 2020 Fish Operation Plan. We request the Corps of Engineers resume juvenile transportation, using trucks, at Lower Granite and Little Goose dams on August 1, 2020 (start collections at 0700 August 1) and not re-initiate summer transportation at Lower Monumental Dam in 2020.

NOTE: This SOR does not change the date when reduction in summer spill levels are scheduled to occur (August 15th).

JUSTIFICATION

The 2019 - 2021 Spill Operations Agreement (Agreement) suspended the use of juvenile transportation from the start of the summer operations period (June 21st) through August 14th. This action was partially based upon a review of draft results from the Responses of Snake River Fall Chinook Salmon to Dam-Passage Strategies and Experiences report (now final report - Smith et al 2018). The Agreement captured the potential for revising the transportation resumption date - "*with allowance for Technical Management Team adaptive management adjustments,*" because it acknowledged that the August 15th date to resume juvenile transport did not receive robust technical review and was questioned by some Spill Operations Technical Team participants at the time of Agreement development.

There has been additional analysis and review of juvenile transportation effectiveness data relative to the date for resuming juvenile transportation. Smith et al (2018) provided information on juvenile migration timing and transport vs bypass (T:B ratio) performance. The T:B ratio represents the ratio of the SARs of the two groups of fish. In addition, supplemental analysis of the Smith et al (2018) results and consideration of management preferences has occurred.

The Smith et al (2018) results advanced our knowledge regarding the relative SARs of juvenile fall Chinook salmon that are transported and bypassed. The results showed more adults return from juvenile fall Chinook salmon that are 1) bypassed early in their migration season and 2) transported late in the transportation period. It is likely that this pattern arises from deteriorating conditions in the river associated in part with increasing temperatures and declining flows that increase predation rates. However, a definitive date when transportation becomes an unequivocal net benefit to adult returns is not clear due to low precision and inter-annual variability in the seasonal patterns of T:B ratios. As such, determining a date to commence summer transport has led to substantial discussions involving diverse management perspectives.

This SOR for an August 1 commencement of summer truck transport is specific to 2020 operations. Collaborative development of a transportation strategy for operational planning in 2021 and beyond is expected. Potential attributes of such a strategy include: staggered operation, PIT-tagging all collected summer juvenile migrants between July 1st and August 31st, intensified PIT-tagging of Clearwater natural production, examination of passage routes (spill,

ASW, RSW versus powerhouse) relative to summer operations and reach survival from Lower Granite Dam to below Little Goose Dam.

The following influenced our SOR request and should inform future deliberations of summer period transportation.

1) Spawning, release, and rearing location of juveniles effects emigration timing. Natural origin juveniles from Clearwater spawning locations are the predominate post-June migrants.

- Future transportation resumption date analysis should emphasize data specific to Clearwater natural origin or surrogates (or proportionally weighted for migrant “type”) for weekly periods starting July 1 and ending August 31. Some concern with using surrogate data to represent natural origin behavior and performance exists.
- PIT-tag data for the time period in question is limited and may be inadequate to inform or provide reasonable inference for a decision.

2) Transport:Bypass (T:B) ratios characterize (with associated uncertainty) periods when transported juveniles exhibit higher, equal, or lower SARs relative to bypassed juveniles.

- Some fish managers consider transportation as beneficial only when T:B ratios are statistically higher than 1 (i.e., dark green in Figure 36, Smith et al 2018). Performance of transported and bypassed fish should be viewed as biologically uncertain during periods when T:B ratios are not statistically higher (light green) or lower (light blue) than 1. While point estimates in these light color areas are either above or below 1, the associated uncertainty of those estimates indicates that the actual outcome may not have actually been beneficial or detrimental as indicated by the colors in the figure.
- True in-river migrants (non-JBS route) are not represented in the evaluation used to calculate T:B ratios in this evaluation. T:B ratios only apply to fish that encounter a JBS route.

3) Across year variability in date when T:B is statistically greater than 1 is high. For example, Lower Granite and Little Goose dam T:B estimates range from ~July 15 to years with no values greater than 1, with a geometric mean of ~August 10 and ~July 10, respectively.

- Some managers feel the date for resumption of transportation should be based on mean or latest date (using the mean hedges bets for big impacts to adult returns yet uncertainty of benefits is high whereas using the latest acknowledges that transported fish rarely show robust SARs and have impacts to adult migration success - they exhibit lower spawning site fidelity and slower migration rates). Managers also acknowledge that other ongoing and future efforts aim to achieve in-river survival greater than 40% and target robust SARs, not just the higher of two potentially low SARs.
- August 15th resumption was pragmatically associated with the operation change that reduces spill; increases in powerhouse encounter and routing through the Juvenile Bypass System (JBS).
- Changing the summer transportation date in the agreement may not reasonably result in further improved fish benefit as estimated through indices of improved smolt-to-adult returns, (e.g., reservoir reach survival, fish travel time); it does not change/improve the in-river migration conditions.

4) Some motivation for ceasing transportation was cost savings (reduced barging contract cost). We understand that these cost reductions are not applicable to the revenue pillar of the Agreement, however reduced barging cost was anticipated to help fund other Corps Operation and Maintenance (O&M) activities that have direct fish benefits.

5) NOAA-led PIT tagging of juvenile summer migrants handled in the juvenile bypass systems will not occur in 2020 due to COVID-19 restrictions on field work by Department of Commerce staff.

- Learning opportunity from a staggered (e.g. - 4 day transport/4 day bypass) operation not possible in 2020.

References

Smith, S. G., T. M. Marsh, W. P. Connor. 2018. Responses of Snake River fall Chinook salmon to dam passage strategies and experiences. Report of the National Marine Fisheries Service and U.S. Fish and Wildlife Service to the U.S. Army Corps of Engineers. Walla Walla, Washington.

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