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MEMORANDUM

TO: Tom Lorz, CRTFIC

FROM: Michele DeHart

DATE: May 2, 2014

RE: Performance testing at LGS and LMN Dams for subyearling Chinook in 2013

In response to your request, we have reviewed the final report *BiOp Performance Testing: Passage and Survival of Subyearling Chinook Salmon at Little Goose and Lower Monumental Dams, 2013*, and the accompanying memorandum from Pacific Northwest National Laboratory *Response to comments on report on summer 2013 LGS & LMN performance tests*.

This report raises many of the same concerns expressed regarding previous performance tests, including tagging and handling effects, lack of representation of the run-at-large, and the inflation of survival estimates (see FPC memos dated March 24, 2011; February 15, 2012; March 16, 2012; March 23, 2012; January 4, 2013; February 11, 2013; March 19, 2013; March 22, 2013; October 7, 2013; December 3, 2013; and January 4, 2014). Our concerns specific to 2013 testing are highlighted below, followed by a more detailed explanation.

- The study has the highest rejection rate (18.8%) of any performance tests conducted to date.
- The method of using smolts collected in the juvenile bypass system (JBS) to attempt to detect a size-selective bias in the JBS is flawed.
- The 2013 performance test represents a seasonal estimate of survival under spring and summer operations. Therefore, if spring spill volumes are terminated earlier, as outlined in the 2014 Biological Opinion, the effects on subyearling Chinook survival cannot be inferred from the 2012 and 2013 performance tests, and additional testing will be necessary.

High Rejection Rates

Testing in 2013 had the highest rejection rate of any performance testing to date, at 18.8% of smolts sampled. These fish were rejected from the study due to size (13.6%) or condition (5.2%). For comparison, after a 12.6% rejection rate at The Dalles Dam in 2010, SRWG members revised the rejection criteria to reduce rejection rates in future studies.

Although reasons for high rejection rates are extensively explained by the March 11, 2014, memorandum from Geoff McMichael, the fact remains that the median-sized fish are overrepresented in the study. The high rejection rates in 2013 effectively eliminated a large portion of the run-at-large. If JSATS tags cannot be used to adequately represent migrating smolts, performance testing as currently conducted will not be appropriate for management decisions.

Acoustic Tags Do Not Provide Appropriate Data for Bypass Size Selectivity Analysis

In the supplemental memo provided with the final report, an analysis with the SURPH model is used to test for bypass selectivity. This analysis uses data from the performance tests, where fish collected in the juvenile bypass system were rejected based on size and condition.

The analysis does find a negative relationship between size and likelihood of passage through the juvenile bypass system. However, the usefulness of this analysis is doubtful, because it does not include the smaller fish of interest — those below the JSATS tagging size (<95 mm) that caused such high rejection rates during performance testing. The assertion that fish too small for tagging are overrepresented in the juvenile bypass system requires extrapolation of the results beyond the actual data used in the analysis, and does not explain the differences in rejection rates between 2012 and 2013.

Performance Testing in 2013 Represents Only Season-Wide Survival

The 2013 performance test at Lower Monumental was designed to produce a seasonal estimate of survival for fall Chinook under the existing migration conditions. The 2013 survival estimates measured at Lower Monumental were higher during the early portion of the test and lower during the later portion. The out-migrants passing during the early portion of the test (June 6–20) experienced higher spring spill operations and higher survival estimates, while those passing later in the test (June 21–July 8) experienced lower summer spill operations and lower survival estimates. While there may be a seasonal effect in survival with survival decreasing over time, this study was not designed to test differences in spill levels and, therefore, the higher survival due to spill cannot be negated.

The 2014 Biological Opinion (BiOp) contains a change in the dates of spring spill at Lower Monumental Dam which will end spring spill earlier in the season. Survivals under specific operations have not yet been tested, so results from 2012 and 2013 performance testing cannot be extrapolated to predict survivals under other operations. An earlier transition to summer spill could in fact lead to a lower overall project survival and will require additional performance testing specific to changed BiOp operations.