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MEMORANDUM

TO: Tom Lorz

FROM: Michele DeHart

DATE: August 23, 2013

RE: Research Proposals Submitted to SRWG for Research in 2014

At your request, we have reviewed some of the proposals presented to SRWG on August 1, 2013. These proposals are to conduct research during 2014. Our comments on these proposals are below.

Evaluation of Bonneville Powerhouse 1 Minimum Gap Runner Units Using Sensor Fish Device (TSP-S-14-2)

This proposal outlines plans to use sensor fish at Bonneville Powerhouse 1 to collect data on conditions in the minimum gap runners and within turbines at and above the 1% efficiency range. One stated goal of this proposal is to "fill data gaps in the Turbine Survival Program's (TSP's) Biological Index Testing (BIT) report."

- No details are provided about the expected variability in results, the minimum required sample sizes, Powerhouse 1 operations to be tested, the type of analyses to be used on the resulting data, or the types of comparisons to be made using the data. This makes it impossible to evaluate the quality of the potential data and whether it will be able to inform project operations.

- Another stated goal of this project is to correlate sensor fish conditions with results of studies with live smolts. However, no details are provided about how this will be carried out, what kinds of comparisons will be made, or how data will be analyzed. The FPC has previously outlined confounding factors for these types of studies, including size of test

fish, whether passage distribution accurately reflects run-of-river passage, differences between test fish and untagged smolts in swimming ability and orientation, and long-term effects of turbine passage. For more details on these issues, please see FPC Memo from July 30, 2012.

- Although sensor fish may be able to provide some data on physical conditions with the gatewells and turbines, there is too little information in this proposal to evaluate the quality of the expected data or how it might be utilized to inform decisions on project operations. The proposal is incomplete and does not contain a discussion of the power of the test or type I or type II errors that would be necessary to actually evaluate differences in operations.

Evaluation of Methods to Reduce Straying Rates of Barged Juvenile Salmonids (TPE-W-11-4)

This proposal is to explore alternative barging protocols that might reduce straying rates in returning Steelhead. More time will be spent in the test barges, with delays at critical tributaries. Other test fish will be transported under current standard conditions.

- It is unclear from the proposal if the test barges will be loaded only with tagged fish included in the study, or will be loaded as a regular barge. If only test fish are to be used, the benefits of barging protocols will be inseparable from the benefits of low densities and the resulting low risk of disease and stress.

- If test barges are to be loaded as regular barges, a number of questions are not addressed by the proposal.

    - What portion of the run-at-large is expected to be transported in slow-moving barges?
    - What are the implications for SARs of the run-at-large if a substantial proportion is to be transported under test conditions?
    - Will PIT-tagged smolts from other programs, such as CSS, be included on test barges?

- The numbers of smolts to be tagged under this proposal, although large, will be insufficient to accurately evaluate the impacts of changing barging protocols. To test for a difference in SARs between barging techniques, more than a million smolts would have to be tagged at Lower Granite. Similarly, conversion rates will not be analyzed due to insufficient sample size.

- One metric proposed for actual statistical analysis is detection of wandering in tributaries. However, a significant difference will be detected only under optimal conditions, namely a wandering rate of 6%–7% in control fish, a reduction in wandering of 50% under the modified barging protocol, and high SARs.

- The lack of ability of this study to detect differences in important metrics such as SARs and the unlikeliness of detecting differences in other metrics makes the large amount of smolt handling and tagging unwarranted. Given the low probability of useable results and potential harm to smolts due to increased rates of disease, crowding, and stress due to time spent on the barge, we do not recommend this study.

Juvenile Salmonid Dam Passage and Survival at McNary and John Day Dams, 2014 (SPE-W-12-4 and SPE-P-08-3)

This proposal is similar in design and intent to previous performance testing at McNary and John Day in 2012, and other testing throughout the hydrosystem since 2010. FPC has outlined a number of concerns about these studies. For details, please see FPC memos from June 24, 2009; July 19, 2010; February 16, 2011; March 24, 2011; June 21, 2011; February 15, 2012; March 16, 2010; March 23, 2012; January 4, 2013; February 11, 2013; March 19, 2013; March 22, 2013.

- In particular, this proposal includes changing the release location of the R3 control group to increase the precision of survival estimates. This will, in theory, not change the overall project survival estimates because the ratio of R2 to R3 survival should not change. However, it will make direct comparisons with 2012 reach survivals impossible. With no ability to compare the breakdown of survival estimates between years, it will be difficult to assess potential problems in reach survivals.

- It was suggested at SRWG on August 22 that an array be placed at the river km 422, the location of the 2012 R3 release. This array placement would at least give researchers some ability to detect differences in survival estimates between years due to differences in release groups.