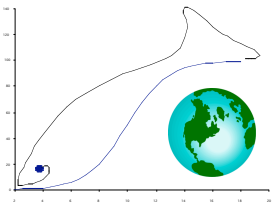


ECO LOGICAL RESEARCH

Eco Logical Research
Nick Bouwes, Ph.D.
Environmental Consultant
456 South 100 West
Providence, UT, 84332
phone/fax: (435) 753-8472
email: nbouwes@comcast.net

To: Rodney Sando

From: Nick Bouwes, Eco Logical Research

Re: Review of the Bonneville Power Administration's analysis of the biological impacts of alternative summer spill operations

Date: January 29, 2004

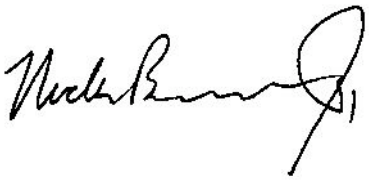
Dear Rodney,

As requested, I have reviewed the Bonneville Power Administration's analysis of the biological impacts of alternative summer spill operations. I believe the approach used to evaluate these impacts suffers from several deficiencies as to limit the utility of their results. The BPA analysis takes a dangerous approach by using a simple juvenile passage model to estimate the difference in the number of adults under different management scenarios. Adult numbers are compared against potential revenue gains to justify a management strategy. No context is given for the value of an adult fall chinook relative to fall chinook populations or to management. This approach suggests that the rarer a species becomes the less mitigation strategies should be applied to ensure its survival. The uncertainties inherent in this analysis (e.g. survival estimates, smolt-to-adult return rates, benefits of offset mitigation, etc.) are not considered, thus the risks to the populations in question are not assessed placing the burden of proof once again on species in need of protection.

Specifically, the analysis ignores the caveats providing by NOAAF who developed this tool. The BPA approach is inappropriate because; the model cannot predict the likelihood of adult returns; does not include sources of uncertainty thus no evaluation of risk is possible; the model is based on seasonal averages and thus does not include a time or seasonal component and cannot evaluate seasonal changes in spill patterns; and the model is not mechanistic and cannot evaluate direct and indirect mortality by different routes of passage. In addition, the results are highly dependent on stating juvenile numbers and smolt-to-adult return rates, which are likely too low. Some mistakes in the formulas or model inputs are noted. Also the benefits to offset mitigation are highly uncertain, optimistic, and untested.

The model can be used to evaluate an alternative scenario not considered by BPA, but one that is more consistent with the BiOp and a spread the risk strategy. If used in a BPA type analysis, the SIMPAS model suggests that ceasing transportation and providing a spring-like spill program in the summer provides large increases in adult numbers over current BiOp and no spill scenarios. If the BPA analysis is emphasized in developing alternative spill programs, then I suggest that this alternative scenario also be considered.

Sincerely,



Nick Bouwes