



**Independent Scientific Review Panel**  
for the Northwest Power & Conservation Council  
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**Memorandum (ISRP 2009-51)**

**December 10, 2009**

**To:** W. Bill Booth, Council Chair  
**From:** Eric Loudenslager, ISRP Chair  
**Subject:** Follow-up Review of Accord Proposal, Twin Lakes Enhancement Proposal  
(#2008-111-00)

### **Background**

At the Council's July 1, 2009 request, the ISRP began a review of the Colville Confederated Tribes' *Twin Lakes Enhancement Proposal* (#2008-111-00), a Columbia River Fish Accords project. The project's purpose is to improve summer habitat for native inland redband trout in Twin Lakes, Washington by enhancing dissolved oxygen levels in bottom waters.

On July 24, 2009, we released an initial review and requested a response ([ISRP 2009-32](#)). In our initial review, we found that the proposal lacked sufficient technical justification, background information, and detail in several areas (including study design, objectives, and methods) to enable a scientific evaluation. On September 7, 2009, the Colville Confederated Tribes (project proponents) responded to our comments by providing a revised proposal and a letter highlighting some of the changes they made to their proposal.

On October 16, 2009, we released our review of the revised proposal ([ISRP 2009-41](#)). We found the revised proposal did not meet scientific review criteria because the proposal did not provide evidence that alternative treatments were considered that had the potential to provide a longer-term solution to the phosphorous eutrophication problem. We suggested that an adequate future proposal should explore potential alternatives and address other comments in our review.

At the request of the Colville Tribe, the ISRP participated in a teleconference call on November 16, 2009 to clarify review concerns. Based on this teleconference the Colville Tribe provided a response in a revised proposal with an accompanying letter explaining the changes. On November 24, 2009 the Council requested our review of the Colville Tribes' submittal. We appreciate the Tribes' constructive approach to the review process. Our review of the revised proposal follows below.

### **ISRP Recommendation**

*Meets Scientific Review Criteria (Qualified)*

Qualification: Trout growth, survival, and harvest monitoring needs to be better explained and summarized in future proposals. Specifically, monitoring plans for trout distribution, growth, survival, tissue contamination, and harvest need to consider the data and statistical requirements to satisfy management needs. No further responses to the ISRP are needed for this review iteration.

## **ISRP Specific Comments**

In our previous review, we suggested that an adequate proposal would:

- consider potentially more effective and efficient management approaches, such as alum treatment, that have the potential to solve or provide longer-term treatment of the phosphorous eutrophication problem than oxygenation
- include trout survival measurements
- describe hydroacoustic and creel survey designs and methods in greater detail
- demonstrate significant progress in community efforts to reduce external nutrient loading

We also suggested monitoring changes in methyl mercury. This issue was further discussed at the November 24 teleconference.

Our review below is organized by those previously identified issues.

### ***1. Alternative Strategies***

The Colville Tribe staff and consultants revised the proposal by including a detailed discussion of alum treatment and aeration versus oxygenation. Their choice of employing oxygenation is logical and consistent with lake management practices and the environmental conditions that exist in North and South Twin Lakes.

### ***2. Trout Survival Measurements and Hydroacoustic and Creel Survey Designs***

In the proposal the proponent states “*In 2008 the study was evaluated by Dr. John Skalski of the University of Washington and suggestions were made to improve the study. These suggestions have been implemented.*” However, the proposal does not actually identify what these suggestions were and how they have been incorporated.

Objective 2 intends to measure angling pressure, catch-per-unit-effort, survival of differentially marked release groups of trout, and growth and condition of fish. These attributes should be adequate to establish whether the overall goals of the trout stocking are being met.

Section G. Monitoring and Evaluation is challenging to follow. There is mention of sonic tracking in the past that is not anticipated to be continued. Hydroacoustic surveys were conducted in 2007 and 2008 and are planned for 2009 and annually for the foreseeable life of the project. How these data will be analyzed and incorporated into management is not evident in the proposal.

One hundred fish (fifty per lake) will be fitted with internal depth recording tags and externally marked with a floy tag. Proponents anticipate that 15% will be recovered, which would be 7.5 fish collected per lake. It is not clear that this information will be sufficient for concluding the project is successful with regard to trout survival, growth, and yield to harvest, than the creel and gill net data.

The project proponents have made significant improvements in the proposal, but the explanation of monitoring for trout stocking attributes needs to be improved in subsequent review cycles. Monitoring should collect data appropriate for the goals and objectives of the project. Linkages between limnological and fisheries objectives and monitoring data need to be strengthened and presented with a clearer explanation. Because there are only two experimental units, North and South Twin Lakes, a strong argument using ancillary data from other treated lakes is required before any differences in results for the two lakes can be attributed to the oxygenation treatment. A similar situation exists for comparisons of results before and after oxygenation in a single lake.

### ***3. External Nutrient Loading***

Sufficient detail was provided in the proposal and during the teleconference to indicate that a number of measures have already been implemented to reduce nutrient input to the lakes from the watershed. Although the proponents did not provide the estimates of external nutrient loading in the proposal, they indicated in the telephone conference that these estimates were in the process of being calculated by another group from the Tribe. Those estimates should be included in future submissions of project-continuation proposals.

### ***5. Methyl Mercury Monitoring***

The ISRP is pleased to note the addition of monitoring mercury levels in one or more species of fish. The potential of this project for reducing levels of mercury in fish over time could prove to be a significant benefit from this oxygenation approach, which could have implications for other similar projects in the future.

### ***Other***

The revised proposal (combined with input from the teleconference) provides sufficient information to justify using pure oxygen diffused into the lake to remediate an anoxic hypolimnion during summer months. The team appears to be well qualified to undertake the tasks. The explanation of actions to reduce external phosphorous, and the evaluation of alum, aeration, and oxygenation, is scientifically adequate.

The ISRP continues to have concerns that some aspects of the proposed work have not been sufficiently described. At this time the fishery monitoring includes a creel census, horizontal gill netting, internal depth monitoring tags (with the fish collected during gill netting or creel census, and identified by floy-tag), and hydroacoustic monitoring. No discussion is provided on the hydroacoustic tags used, and how these data will be used in management. The analysis of the creel census data is insufficient to determine that they are robust enough for management. This section of the proposal should be improved in future project-continuation proposals.