



Independent Scientific Review Panel
for the Northwest Power & Conservation Council
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Memorandum (ISRP 2007-7)

June 20, 2007

To: Tony Grover, Fish and Wildlife Division Director, Northwest Power and Conservation Council

From: Eric Loudenslager, ISRP Chair

Subject: ISRP Review of the latest revision of the FY 2007-09 proposal 199101901 (dated 05/25/07), Hungry Horse Mitigation/Flathead Lake

Background

This is the ISRP's fourth review related to the Confederated Salish and Kootenai Tribes' project 199101901 (*Hungry Horse Mitigation/Flathead Lake*) as part of the FY 2007-09 project selection process. Prior to this memo the ISRP has reviewed three versions of the FY 2007-09 proposal: (1) a preliminary review of the original proposal (dated 01/10/06), (2) a subsequent final review of the proposal considering project sponsor responses to our preliminary comments, and (3) at the request of the Northwest Power and Conservation Council (Council), a review of a second revision of the FY 2007-09 proposal (dated 12/11/06) was provided by the ISRP in our memo dated 02/22/07.

The revised proposal (version 3, dated 05/25/07, 1.5mb PDF) is available at: www.nwcouncil.org/library/isrp/isrp2007-7b.pdf. Other supporting documents, the original proposal, the original ISRP reviews, and the Council recommendation can be found at: www.cbfwa.org/solicitation/components/forms/Proposal.cfm?PropID=549.

In our last review of the proposal, in a memo to the project sponsors dated 02/22/07, we asked for a more complete accounting of accomplishments to date considering the long running history of the project. Additionally, we asked that the response address the following:

- (1) In the background section, additional information is needed to more specifically identify the types of habitats to be restored, why particular sites were selected in the context of watershed limiting factors, and the focal species to be recovered.
- (2) More detail is needed describing how this project coordinates with several closely related projects and how, in the aggregate, these projects address critical issues in this part of the Flathead Basin.

- (3) The supplement providing project results can be incorporated into the proposal narrative (to be consistent with other proposals), but we emphasize that we are interested in ecological outcomes in addition to a description of restoration activities.
- (4) The objectives need to be better organized, prioritized, and related to the subbasin plan. The long-term goals of the project also need to be stated, including timelines.
- (5) The methods need much more detail (including response metrics) to demonstrate that the projects are using best or most reasonable techniques to determine if restoration objectives are being adequately addressed.
- (6) An expanded description of the fisheries and habitat monitoring and evaluation program, with an appropriate level of detail.

For clarification of the above recommendations the project sponsors requested a teleconference call. The ISRP agreed to this request, and on March 30th, 2007, the ISRP and the project sponsors from the Confederated Salish & Kootenai Tribes held a teleconference to discuss how the project sponsors could most effectively revise their proposal in response to the ISRP's comments. Eric Loudenslager, Tom Poe, Pete Bisson, Jack Griffith, and Erik Merrill (coordinator) participated for the ISRP. Kerry Berg participated for the Council, and Barry Hansen led the discussion for the project sponsors. Informal notes from the discussion (see attached notes) were provided to the project sponsors to assist them in revising their proposal.

Summary

ISRP Final Recommendation: Meets Scientific Review Criteria In Part (qualified)

Comment: In their revised proposal, which is the subject of this memo, the project sponsors partially responded to some of the above ISRP recommendations, but overall did not significantly improve other key parts of the proposal. The ISRP emphasizes that the proposal continues to be insufficient in that it lacks a clear statement of a problem and an outline to resolve that problem that is both quantified and scientifically justifiable.

The ISRP concludes that Objective 2 related to using angling to harvest lake trout in an effort to reduce lake trout impacts on westslope cutthroat and bull trout in Flathead Lake is rated *Does Not Meet Scientific Review Criteria*. The latest proposal still fails to acknowledge efforts to achieve similar objectives in other areas of the region. For example, the original proposal did not mention attempts to control lake trout in Yellowstone Lake and Lake Pend Oreille, which show how difficult (perhaps impossible) it is to reverse a lake trout invasion in systems with *Mysis*, and that harvest from recreational angling alone will not be adequate. The sponsors partially responded to the ISRP's request to develop the rationale that the ongoing effort to reduce lake trout numbers via the fishing derbies might overcome the compensatory ability of the surviving lake trout. Sponsors provided a modeling exercise that demonstrated that increased harvest could reduce the lake trout population. Unfortunately, the lake trout

population has not been reduced by angling, and the angling efforts have not yet achieved a sufficient harvest. Further, the sponsor did not provide a rationale that this reduction would in turn provide a quantifiable increase in abundance of westslope cutthroat or bull trout.

Objective 2, work element 4 -- Remove brook trout from westslope cutthroat trout streams needs to be more specific before it is scientifically justifiable. Similar to lake trout reduction by angling, there is variable success with brook trout removal. The rationale for specific streams needs to be fully developed as part of a broader westslope cutthroat trout rehabilitation effort.

The ISRP suggested that the lake trout monitoring might be justified if shown to be part of a long-term fisheries plan for Flathead Lake, and funding for the fishing derbies might be justified if linked to a larger lake trout removal effort. The sponsors did not respond to these suggestions. Consequently, Objective 1, the Flathead Lake fishery monitoring work elements is rated *Does Not Meet Scientific Review Criteria*.

Objective 3 -- Replace lost angling opportunity with hatchery-reared fish released in irrigation reservoirs is rated *Meets Scientific Review Criteria*.

Objective 4 -- The plan to investigate populations of western pearlshell mussels is insufficiently detailed to judge its scientific merits. Although a mussel sampling program is apparently underway, no information on the five populations was given, habitat relationships were not described, and criteria for reintroducing this species were not presented. Consequently, the mussel objectives and work elements are not scientifically justified and are rated *Do Not Meet Scientific Review Criteria*. Scientific and technical background related to western pearlshell mussels needs to be developed in section B, rather than first appear as an objective.

Objective 7 -- Tributary stream habitat improvement in class 2 and 2.5 streams is rated *Meets Scientific Review Criteria (qualified)*. The qualification is that from the proposal the ISRP cannot establish a quantifiable benefit to target fish populations and their habitats. This issue should be addressed by Council and BPA in contracting, or to the ISRP in a document addressing this single element. In this revised proposal the sites and watersheds where tributary habitats would be restored are not identified on a map. The ISRP suggested that support for the stream habitat work could be justified if shown to be part of a well developed and prioritized restoration program, or that the sites could be specifically linked to habitat restoration objectives in the subbasin plan. Currently, the habitat restoration is being monitored almost exclusively with photo-point documentation. Additional metrics that represent trends in ecological conditions are also needed. These can be very simple, based on the Flathead watershed assessment and subbasin plan. The sponsors did not respond to this suggestion. What the ISRP is asking for is a more specific set of habitat objectives, a clear rationale that the sites selected for restoration are justifiable in terms of correcting factors that limit fish populations, and a strengthened effectiveness monitoring plan (the implementation monitoring presented in the proposal was satisfactory). The effectiveness monitoring component should be

sufficient to detect quantifiable habitat improvements and increases in fish populations or expanded distributions.

Specific Review Comments

A. Abstract

A general point is that the proposal continues to be an insufficient summary of the scientific basis for the proposal in that it lacks a clear statement of a problem and an outline to resolve that problem that is both quantified and scientifically justifiable. As an example of this deficiency, the abstract does not describe a focal species, an explicit biological objective for the focal species, limiting factors for the focal species, and methods to reduce those limiting factors with some sort of timeline for achieving the goals of focal species abundance. Instead, the abstract provides a narrative summary of the project's past work and the tasks planned for the FY 2008 and FY 2009 periods.

B. Technical and/or scientific background

The latest revision adds one paragraph that identifies the focal species to be recovered and generally gives reference to locations/habitats given priority for restoration in the Flathead River Subbasin Plan (the proposal refers to page numbers in the plan). However, this section does not go far enough in providing the details of the proposed tasks in the context of achieving the objectives for the focal species, the subbasin plan, or the Hungry Horse mitigation plan. This section states that the focal species are westslope cutthroat trout and bull trout, and that the project is attempting to address the loss of habitat (quantity and quality) in the interconnected Flathead watershed owing to Hungry Horse Dam impounding the river. However, it does not provide the quantitative assessment (either in stream length, fish numbers, or fish communities) that forms the basis of the Hungry Horse Mitigation agreement. It does not provide any indication of how much of that loss is covered by this proposal or related proposals. This section does not describe the solution this proposal will provide to improving environmental conditions for focal species.

The revised proposal provides some information on class 1, 2, 2.5, and 3 streams and their relationship to restoration potential and proposed actions. But the appropriate scale and context for the tasks are missing. How many kilometers of class 1 tributary streams are there? How many kilometers of class 2 and 2.5? How many kilometers of class 2 and 2.5 streams need to be improved to class 1 to achieve the subbasin objectives and Hungry Horse Mitigation agreement objectives? What specific tasks are being proposed under this proposal and timeframe (FY 2008/09)?

C. Rationale and significance to subbasin plans and regional programs

This section of the revised proposal is exactly the same as the last version, so previous ISRP comments remain unchanged; “The proposal identifies several limiting factors from the Flathead River Subbasin Plan and indicates that the project is addressing these factors in a general way. In the previous section of the proposal the sponsors also indicate how this project addresses the 1994 Fish and Wildlife Program (Section 10.1). The Flathead subbasin plan actually contains very little about Flathead Lake and the lake trout/kokanee reintroduction issue, which are key elements in this proposal.”

D. Relationships to other projects

This section of the proposal has been revised to indicate **how** this project interacts with other projects, which is an improvement over the last version. However, indication of data sharing and how M&E is coordinated is still lacking.

E. Project history

This section of the revised narrative has been significantly improved and is now adequate. In response to our earlier recommendation, the sponsor revised the Project History section and incorporated the project results supplement that was provided in the last review iteration. As we indicated in our last review, the material provided in the supplement was helpful and enabled a better understanding of work to date. However, it reinforces our perception that (a) critical improvement is needed in prioritizing elements of a program that will have the most benefit for native species, and (b) better M&E is needed for some program elements – not a complete range of M&E for every activity, but at least systematic photopoints, quantification of the length of stream improved or miles of new habitat made available, with some before/after fish monitoring on a subset of the sites. One ongoing task is the evaluation of offsite fish planting, but no methods are described nor results given. Another ongoing task is to “mimic natural beach formation.” The ecological justification for this type of habitat improvement project, and how it fits with Fish and Wildlife Program goals, should be provided. Graphs would be more useful if they included more indication of the data variability (range, etc.) where appropriate.

F. Proposal biological objectives, work elements, and methods

Objectives - This section still remains the major weakness of this proposal, although some improvements have been made since the last version. The major revision is the addition of a background section following each Objective. This is useful material but most appropriately, belongs in Section 1 – Technical and Scientific Background.

As requested by the ISRP there is a detailed demographic explanation to justify using angling as a method of lake trout reduction. There are two components of this effort

(using angling and fishing contests) that the ISRP finds inconsistent with ISRP review criteria. The first is the acknowledgement by the project sponsor that to date angling has not worked to the extent that the lake trout population has not decreased. Further, by angling, the harvest target has not been achieved. So, even if the demographic modeling exercise is correct, executing the population abundance reduction through angling has not been successful. This is disappointing, but not surprising. More troubling to the ISRP however, is the statement on page 36: “Step 5: We determine the harvest necessary to increase the mortality rate that will reduce the theoretical population from 0.32 to 0.50. Although we do not know the specific mortality rate that will reduce the Flathead population, there are many examples of populations with mortality rates of less than 0.50 that are sustainable (Payne et al. 1990).” It is not entirely clear what sustainable refers to in this statement – to the lake trout population or to the lake trout fisheries. In either case, it seems odd to the ISRP that on the one hand the sponsors are trying to reduce the abundance of lake trout to improve the status of westslope cutthroat and bull trout but at the same time trying to maintain a sustainable lake trout population (or fishery). Finally, this section does not indicate what level of depression of the lake trout population is needed to facilitate recovery of the westslope cutthroat and bull trout populations.

Most ISRP comments from the last review still apply. The first two paragraphs of this section are the same as the last version and attempt to give an overview and organization to the objectives but remain confusing. Many of the objectives are also stated as broad goals (i.e., Objectives 3, and 5 – 11) and need to be re-stated as biological objectives that are more specific and measurable. The project actions can then be better related to benefits for fish and wildlife. A majority of the objectives are wide ranging, center mostly on general habitat restoration goals, and are a bit too general to be of real use. They could be re-stated using the habitat restoration material in the supplement.

Methods - The methods for many objectives have been added but are so generally described (i.e., what will be done instead of how) that the reader is uncertain if the techniques to be employed will meet any standards. Metrics are lacking, with the exception of photopoint comparisons.

Monitoring and Evaluation – This section is unchanged. The brief paragraph describing M&E is very inadequate and non-specific to the objectives. The sponsors state that, “We employ a broad and lengthy list of monitoring and evaluation procedures to determine the biological results of our activities.” Details regarding these M&E procedures are what the ISRP needed to see.

More than \$500,000 was budgeted for subcontracts in 2007-09. The nature of that work was inadequately identified and not sufficiently justified.

G. Key personnel, facilities, and equipment

Project personnel appeared to be qualified, but their resumes lack detail. Facilities and equipment were only briefly mentioned with little description of their capacity to enable efficient task completion.

H. Information Transfer

In-house progress reports and reports to BPA are the primary sources of information transfer.

I. Benefits to Fish and Wildlife

There may be both short-term and long-term benefits to fish and wildlife, but better documentation with measurable data is needed to determine this.

Notes on ISRP teleconference with Confederated Salish & Kootenai Tribes on proposal 199101901, Hungry Horse Mitigation/Flathead Lake

On March 30th, the ISRP and the project sponsors from the Confederated Salish and Kootenai Tribes for project 199101901 held a teleconference to discuss how the project sponsors could most effectively revise their proposal in response to the ISRP's comments. Eric Loudenslager, Tom Poe, Pete Bisson, Jack Griffith, and Erik Merrill (coordinator) participated for the ISRP. Kerry Berg participated for the Council, and Barry Hansen led the discussion for the project sponsors. These informal notes are provided to assist the project sponsor as they revise their proposal.

Revised proposal timeline. As a point of process clarification, the ISRP's review memo characterized the Council's recommendation as "the Council recommended partial funding for FY 2007 but made FY 2008-09 funding contingent on ISRP and Council review." However, the Council's recommendation was "Funding contingent on ISRP, Council review of revised proposal. Revised proposal due end of December, 06." Barry should talk with Mark Fritsch and his BPA COTR on the timing for the review. The assumption is that the revised proposal and ISRP review should be complete by the end of May 2007.

Level of detail. Barry Hansen opened the discussion and described the difficulty in finding the right balance between providing too little or too much information in a broad proposal that addressed many problems. Barry's strategy was to keep it simple so the proposal doesn't get too lengthy. Barry described that the Tribes' general approach to the proposal was to describe all potential impacts addressed (and a hydrosystem mitigation responsibility) but then submit a modest proposal to BPA. They use BPA funding to augment other funding. The ISRP said the proposal should clearly describe what elements are fully or partially supported by Bonneville.

In general, the ISRP advised to not be overly concerned about making the proposal too long. (The proposal form instructions states that projects/programs pursuing multiple

strategies should be able to provide sufficient detail in 25 pages.) The proposal should contain a consistent level of detail on stating the objectives clearly, describing the methods concisely, and describing how the results will be monitored and evaluated in relation to the objectives. The proposal needs sufficient detail, but every measurement made to arrive at a conclusion is not needed. For example, the description on why they aren't pursuing kokanee restoration was sufficient.

Results reporting. Barry asked whether the last submittal adequately covered this issue. The ISRP acknowledged the progress made on results reporting in the Supplement, but for the next revision request that the results need to be interpreted on how they met their objectives. This can be done fairly easily. An example might be: harvest was increased by "x" amount, but it doesn't appear that the Lake Trout population has decreased; in fact, the Lake Trout population estimates have increased/remained within "x" range. The results reporting needs to be incorporated into the project history section of the narrative.

Road decommissioning and action effectiveness monitoring – as an example. Barry raised the issue of what constitutes adequate monitoring. They are pretty intent on road decommissioning, but they don't do baseline sediment monitoring. They don't feel that this would be a good use of the funds. The ISRP said the proposal needs to describe some sort of assessment of why the site was selected for decommissioning and some post action monitoring to show that it was effective. There needs to be evidence that the areas where roads are decommissioned are thought to have restoration potential to improve the productivity for the focal species. This can be established in the background section and the relationship to the subbasin (or other) plan. For example the subbasin plan should identify the stream as a high priority location for restoration, and perhaps a westslope cutthroat or bull trout management plan will identify the location as one with high potential. The ISRP agreed sediment monitoring can be tough, but suggested the sponsors shouldn't give up on the notion of effectiveness monitoring. For example, some simple things like pool frequency and embeddedness may be informative. Moreover, it is helpful to reviewers if the proposal explains the logical link from the limiting factor (sediment) to the action (road decommissioning).

Barry said his reading of the literature says that road decommissioning is a good thing. The actions are inherently constructive. When you sample, the variability overwhelms the data. For example, one restoration action they propose is to replace/modify a hanging culvert to reconnect two isolated cutthroat trout populations. The objective is to increase the long-term viability of the population which is hard to measure. The ISRP thought describing this should be quite easy and the objective of increasing long term population viability was a good one.

The ISRP 2006 Retrospective Report contains a section on habitat monitoring and evaluation that should be useful in the revision (ISRP 2007-1: www.nwcouncil.org/library/isrp/isrp2007-1.htm).

Specific points for clarification from the last ISRP memo. The ISRP and project sponsor went through the ISRP's memo point by point.

- (7) In the background section, additional information is needed to more specifically identify the types of habitats to be restored, why particular sites were selected in the context of watershed limiting factors, and the focal species to be recovered.*

Discussion: Barry asked, is this for each work element? The ISRP said the background should describe the problem and the proposed solution to the problem. Identification of the focal species should be up front, for example, recovery of bull trout and westslope cutthroat. Reference to findings in the Supplement, as applicable, would be useful. The ISRP suggested taking two or three key actions and providing good justification for those. The background should lay the foundation for all that follows. It needs to describe the geographic scope of the proposal, Flathead Lake, portions of the Flathead River, and tributaries that are on tribal lands. It needs to identify the focal species, their historic, and current status, and desired restored status. It needs to identify the limiting factors that impede achieving the restored status under the current environmental conditions. It needs to identify the strategies that will be employed to address the limiting factors. It needs to provide scientific justification that the strategy has a reasonable chance for success. For example, if bull and westslope cutthroat trout are focal species in decline in Flathead Lake and predation by lake trout is the limiting factor, and lake trout removal is the strategy, and angling is the proposed method, then evidence needs to be provided on the size of the lake trout population, the numbers that need to be removed, and evidence that angling has the potential to achieve the reduction.

- (8) More detail is needed describing how this project coordinates with several closely related projects and how, in the aggregate, these projects address critical issues in this part of the Flathead Basin.*

Discussion: Barry said he had the information to address this request.

- (9) The supplement providing project results can be incorporated into the proposal narrative (to be consistent with other proposals), but we emphasize that we are interested in ecological outcomes in addition to a description of restoration activities.*

Discussion: The Council's recommendation called for a revised proposal, and the ISRP agreed this was needed. The ISRP suggested losses from Hungry Horse dam (1991) be put in the perspective of improvement to bull trout and westslope cutthroat populations. An example could be the culvert removal described above -- the biological objective is persistence of westslope cutthroat trout in that stream.

- (10) The objectives need to be better organized, prioritized, and related to the subbasin plan. The long-term goals of the project also need to be stated, including timelines.*

Discussion: Barry said he could address this request.

- (11) *The methods need much more detail (including response metrics) to demonstrate that the projects are using best or most reasonable techniques to determine if restoration objectives are being adequately addressed.*

Discussion: The ISRP said some details are needed on the monitoring actions, for example, the macroinvertebrate work. The ISRP suggested if there are preliminary results, they should be presented. This will give the ISRP some confidence the monitoring and evaluation is working.

- (12) *An expanded description of the fisheries and habitat monitoring and evaluation program, with an appropriate level of detail.*

Lake management. The ISRP said they had a general request for the proposal to clarify and justify the program/actions on the lake. Is this a long-term program?

Barry explained that lake trout were introduced in 1905. By the late 1980s Mysis shrimp stimulated an explosion of lake trout that completely changed the lake ecosystem including the demise of the kokanee populations. The kokanee supported a strong local fishery as well as bald eagle populations. The public called for kokanee enhancement, but the mechanisms weren't understood. The kokanee could not be restored. By 1998 native trout such as bull trout were in serious decline. Research indicated that lake trout were controlling the populations of the other fish, so they focused on lake trout reduction. They created a program in cooperation with Montana Fish Wildlife and Parks. They're committed to testing lake trout reduction through angling. They don't have evidence that this will or won't work.

The ISRP noted that the evidence from Idaho is that angling is not adequate to control lake trout. Barry said he was aware of this and that in Idaho they have jumped into netting, and other take methods. Idaho has had expanded lake trout populations for several decades, but the lake trout domination of the Flathead Lake fish community is more recent.

Barry added that the Tribes have made substantial progress expanding harvest and participation from 300 anglers in 2006 to 900 in 2007. They are sensitive to the fact that they haven't shown results on lake trout reduction, but the program is experimental and they have modeled a harvest target. They acknowledge that compensation is a concern. They are four years into the program. They first want to see if angling works before pursuing alternative strategies. This will be a test case for other areas in the Columbia River Basin.

The ISRP suggested that the proposal needs to describe the modeling that has been done: what the population is (lake trout biomass), what it needs to be reduced to, what angling

is needed to achieve this reduction, and what the native trout response is. These basic problems and goals need to be concisely laid out. The models and methods used to assess the problem need to be described. The information described in this discussion was not in the proposal but is just the sort of information needed in the proposal.

Land acquisition. For land acquisition, the proposal needs a description of the criteria for purchase. If properties have been selected for purchase they should be identified and a description provided. The Tribes had described this in other projects and can summarize in the revised proposal.

Notes by Erik Merrill and Eric Loudenslager, April 5, 2007.

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