



**Independent Scientific Review Panel**  
for the Northwest Power & Conservation Council  
851 SW 6<sup>th</sup> Avenue, Suite 1100  
Portland, Oregon 97204  
[www.nwccouncil.org/fw/isrp](http://www.nwccouncil.org/fw/isrp)

## Review of the Yankee Fork Floodplain Restoration Project Implementation Plan for 2008 - 2018



Step One of the Northwest Power and Conservation Council's  
Three-Step Review Process  
(Project # 2002-059-00)

ISRP 2008-11  
September 21, 2008

Richard Alldredge  
Robert Bilby  
Peter Bisson  
John Epifanio  
Linda Hardesty

Charles Henny  
Colin Levings  
Eric Loudenslager  
Kate Myers

Tom Poe  
Bruce Ward  
John Gardiner, PRG  
Jack Griffith, PRG

# **ISRP Step Review of the Yankee Fork Restoration Plan**

## **Contents**

Background.....	1
ISRP Recommendation.....	2
ISRP Review Summary .....	3
Step Review Elements .....	6

# ISRP Step Review of the Yankee Fork Restoration Plan

## Background

At the Council's July 2008 request, the ISRP reviewed the Shoshone Bannock Tribes' Yankee Fork Floodplain Restoration Project Implementation Plan for 2008 - 2018. This Plan was developed to address the Council's recommendations for the FY 2007-09 proposal for the *Yankee Fork Salmon River Dredge Tailings Restoration Project (2002-059-00)*. Because of the significant scale and cost of the project, the Council recommended that the project be subject to the Council's Three-Step Review Process, and on-the-ground implementation is conditioned on a favorable Step review. Although the Council and ISRP have a substantial history of Three-Step reviews for hatchery projects, this is the first habitat restoration project to undergo Step review.

The Yankee Fork of the Salmon River is located in central Idaho in the Salmon-Challis National Forest east of Stanley, Idaho and is one of the larger watersheds (190 mi<sup>2</sup>) within the Upper Salmon River Basin. The Yankee Fork, historically a major anadromous fish producer, contributes to anadromous and resident fish populations by providing diverse habitats, available low gradient stream channel reaches, and productive aquatic habitat. The Yankee Fork currently supports a remnant Chinook salmon population. Historic dredge mining of the lower section of the drainage has caused channel confinement, down-cutting, and armoring, which has reduced critical spawning and rearing habitat, and thus opportunity for Tribal traditional cultural practices. The Yankee Fork is designated critical habitat under the Endangered Species Act and is considered a high priority habitat in NOAA's Federal Columbia River Power System 2008 Biological Opinion. The goal of the Yankee Fork project is to restore natural river channel characteristics, floodplain function, hydraulic and sediment regimes, and aquatic habitat within the Yankee Fork's dredge reach.

The ISRP has reviewed proposals and responses for this project in four proposal solicitation processes, the latest two were the FY 2007-09 process and the provincial review process, in which the ISRP participated in a visit to the highly altered site. The following ISRP FY 2007-09 comments and recommendation capture the issues raised in the past reviews:

Reviewers continue to agree there can be little doubt that the dredge impacted reach of Yankee Fork could be better habitat for native salmonids. Even with their careful analysis of responses provided by the sponsor, reviewers remain skeptical that significant gains in smolt production from the area and adult production in the upper Salmon River basin will result even if the project sponsors are successful in increasing productivity of the reach. And, because of the profound alteration of the system, reviewers remain unconvinced that the desired rehabilitation is even possible. The ISRP strongly recommends that this project needs a benefits analysis by the Council with comparison to other alternative protection and restoration activities in the area.

The ISRP recommends Fundable in Part (Qualified) for this project. The qualification includes two requirements. First, a thorough analysis of the likely benefits for Chinook salmon and other focal species in the area is required. Second, the sponsors need to obtain pre-implementation reviews of project plans that describe the scientific basis of the methods to be applied and for what purpose. A report of these findings should be submitted to the Council and reviewed by the ISRP before any Fish and Wildlife Program funds are committed to project activities. The ISRP understands that the Council's Three-Step Review Process can be used for complex and high cost restoration projects; this project would benefit from such a review. In sum, this project is scientifically justified to complete this planning phase but is not justified to begin implementation.

The ISRP's review re-visits these issues below in the context of the Step 1 Plan review.

## **ISRP Recommendation**

### ***Does Not Meet Scientific Criteria***

The Project Implementation Plan includes considerably more detail than the 2006 proposal and is substantially enhanced with graphic elements. Its emphasis on restoration of ecosystem *function* merits praise. However, there remain three major areas of critical deficiency. First, the study results were missing many crucial elements including fish population and fish habitat information; quantitative biological objectives; a monitoring and evaluation (M&E) plan; consideration of possible mercury and selenium contamination; and consideration of the project's role in the larger watershed. These needed elements are discussed in greater detail below.

Second, no progress is evident in addressing the issue of land ownership. The proposed work would mostly occur on private property – property owned by the industry that caused the damage proposed for remediation. Value of that property would be enhanced by these proposed actions. As yet, not even an easement has been granted. The ISRP has raised this issue many times in past reviews of this project. Although largely a policy concern, the outcome could have significant impact on the project's long-term biological effectiveness. For example, to ensure that benefits to fish accruing from potential restoration actions persist, a conservation easement or some other type of development restriction would be necessary. Also, as a basic implementation requirement, the sponsors need an acceptable agreement to access the property. This issue should be resolved before the project moves to implementation.

The third, and most important, major deficiency was that the sponsors have not convincingly demonstrated that the project would benefit fish and wildlife resources, in this case primarily Chinook salmon. This is an ongoing issue that has been raised emphatically by past reviews and has not been dealt with in the current proposal. The physical engineering data collection, hydraulic modeling and design (Attachment E) is by far the strongest component of the proposal but is valueless unless based on strong biological underpinnings and adequately meshed with fish habitat needs and riparian ecology. Such connections have not been made nor biological needs and expectations

expressed. Attachment E investigates tributary reconnects, floodplain reconnects, and existing and new pond series access improvements. These preliminary designs and the hydraulic models seem to be competently prepared. However, they were not based on the need to improve specific fish habitat attributes shown to be in need of enhancement, and there are no explicit linkages or even qualitative attempts to forecast fish production from the 12 alternate restoration actions. The possibility that the no-action alternative might be the most cost-effective has not been assessed. As it did in its previous review, the ISRP strongly recommends that this project needs a benefits analysis by the Council that compares the cost-effectiveness of this project with other alternative protection and restoration activities in the subbasin.

For the above reasons, it is not possible for reviewers to support a conclusion that the proposal has satisfied the requirements of Step 1, conceptual planning. Before the project could proceed to Step 2, the following is needed:

1. Completion of missing proposal components – the project sponsors should provide study results on fish populations and fish habitats; establish and justify quantitative biological objectives; outline M&E sufficient for Step 1; and address mercury and selenium contamination.

If any elements above cannot be established at this stage because of inadequate information, then that information should be gathered, analyzed, and incorporated in the next Project Implementation Plan submittal.

2. Resolution of land access and conservation easement issues.
3. A benefits analysis demonstrating the proposed alternatives are favorable to fish and wildlife resources.

## **ISRP Review Summary**

The fundamental scientific question of will this project generate more naturally produced anadromous fish, remains in doubt. No data or references supporting the likely increase in fish production from this project have been added since the 2006 proposal. There is no discussion of how adult and juvenile fish use habitat in the project reach, except for redd counts. This is a glaring deficiency. Important information such as habitat use, trophic relationships and production of juvenile Chinook in the Yankee Fork as it exists now is not given in the proposal. Fish abundance data have apparently recently been transferred to Idaho State University but will not be available to reviewers until spring 2009. These are key data since they might reveal if density dependence is a factor; i.e., if food is limiting the Chinook population in the Yankee Fork. Other important data on residency and migration, which would help assess the potential of juveniles from upstream using habitats in the Yankee Fork, apparently were not obtained and regrettably do not seem to be part of the study design.

The biological component of the proposal is unacceptably weak, in part, because there are no quantitative biological objectives. For Chinook, expected numbers of smolts and adults from a restored dredged reach are given, but they were derived without any real quantitative analysis. The proponents should try to apply models or forecasting tools to estimate the potential improvement in productivity, even at the lower trophic levels, of the alternative restoration strategies.

The baseline pre-restoration study from Idaho State University found the dredged reach within the range of the reference sites in all but one of four reported measures of ecosystem function. Only reduced surface retention capacity compared unfavorably with the reference sites, although subsurface retention again fell within range. These results imply that the dredged reaches are functioning well in comparison to the reference reaches. Thus while it certainly might be expected that such drastic disturbance from dredging would have damaged fish habitat, the baseline measurements provided as yet do not support that expectation.

The addition of a monitoring and evaluation plan could have added credibility to the effort. But there is no M&E plan in the proposal. It is due spring 2009.

In addition to the major scientific questions above, other elements of the project remain unclear in spite of the volume of material presented. As briefly mentioned in the proposal, mercury and selenium were recently identified by the USGS to be present in the watershed at levels that are of concern. Follow-up enquiries to USGS by one of the ISRP reviewers provided indications that selenium in some cases exceeded toxic thresholds. The extent to which mercury and selenium would be released by excavation of tailings (and their possible placement in the stream channel) has not yet been addressed in the proposal. Water quality improvement is a stated goal of the project. But no detail is provided regarding the manner in which the project would address water quality concerns. Thus, the role of contaminant toxicity vs. habitat effects at the present time has not been evaluated/addressed, yet alone what the proposed habitat changes might yield. The return to a meandering backwater/pools regime (somewhat like reservoirs) may eventually lead to decomposition of soils/tailings with releases of organic matter and nutrients modifying water quality and possibly primary productivity. It is known that increases in these materials will increase the rate of mercury methylation (to methyl mercury, the most toxic form to vertebrates). The contaminants that may exist in areas through which the future restored watercourse may flow is important and needs to be addressed more thoroughly. Restoration would probably involve “lost” meanders and enable future meandering through contaminated floodplain. The ISRP is not aware of a quick fix to remediate contaminates. Will proposed habitat changes exacerbate the mercury situation?

The 2006 proposal included a pilot project to test assumptions underlying the proposed actions. In the sponsor’s response to the ISRP review of that proposal, the pilot project was dropped, but very brief mention of it reappears here. A pilot might be an excellent idea given the ambitious scope and cost of the project and its uncertain outcome. Is it

now part of the proposal? What action(s) among those recommended were to be incorporated into the pilot?

Other information alluded to in the proposal but not yet available or provided, including an important USGS report on water and sediment is underway (more field work scheduled for summer 2009). A report of hydraulic and sediment transport modeling (Buffington et al) has apparently been completed according to Attachment E, but is not discussed in the proposal.

The existing environment (physical and biological) has not been adequately described. Importantly, there is no description of why the dredged Yankee Fork segment has not reached a more desirable condition through natural processes in the past 50 years. To say it is a function of a confined channel is overly simplistic. Specifically, why have stream banks not formed? Why has a normal range of sediment size not accumulated? Why has riparian vegetation not encroached? Understanding why this stream segment is “stuck” is critical to designing remedial action.

Furthermore, the dredged segment is described as though it exists in a vacuum when in reality it is affected by upstream and upslope events and processes. What are the roles of factors such as fire (parts of the watershed burned in the Rankin fire of 2000 and the Potato fire of 2006), upstream mining, the USFS 013 road, and such? Also, what effect does the dredged segment have on the Salmon River downstream? Reports from the stakeholders meetings indicate concern that the Yankee Fork sediments are damaging Chinook spawning habitat in the Salmon River downstream.

The addition of tailings into the stream (“experimental sediment inputs”) is briefly presented by CH2M-Hill but not considered as a full-fledged alternative because of mixed stakeholder reaction. Dredge tailings would be placed into the stream to create temporary weirs and drop structures and would provide a supply of sediment to the stream as they erode. Such an approach would appear to be in direct conflict with stakeholder concern about excessive sediment transport from the Yankee Fork into the Salmon River. It indicates the need for more geomorphologic expertise to develop a better understanding of suspended sediment and bedload movement in and through the study site.

The current team on this project is comprised of three groups, Shoshone-Bannock Tribal staff (coordination and riparian plantings), Idaho State University stream ecology researchers, and CH2M-Hill staff. Based on this proposal there is little evidence of exchange of results and ideas among them. No specialists in fish ecology and riparian ecology are associated with the project.

The implementation plan documents are disjointed. Future drafts could be improved with further organization and editing. Although most of the information mentioned in Attachment A is found in the other Attachments, it took a lot of digging to find it. The proposal in its current form has major organizational problems, with bits and pieces scattered throughout with little continuity and a lack of logical progression from (a)

problem identification to (b) discussion of alternative solutions and then to (c) description of preferred action and its monitoring and evaluation. In addition, another proof-reading of the plan would be beneficial to remove ambiguities, improve clarity, and correct spelling and grammar.

In sum, although this implementation plan is more complete and detailed than the earlier proposal, it offers no more compelling evidence of potential benefits to fish or wildlife than earlier versions. Bellmore and Baxter (Attachment B) concluded Attachment B by writing: “So, until we have more data to understand what has been lost in the dredged segment of the Yankee Fork, and what the limiting factors for production are, it is difficult to predict what could be gained via any restoration actions.” Reviewers agree, and feel that this sums up the current status of the proposed implementation plan.

## Step Review Elements

An important part of the major project review process includes an ISRP review of the responses to the technical elements listed below. The Council is looking for a full explanation of how the project is consistent with these elements. These elements reflect and refer to specific elements delineated under relevant sections in the fish and wildlife program. In addition, these elements may be supplemented with issues raised in previous reviews.

*Does the Yankee Fork Plan:*

- 1) *address the relationship and consistencies of the proposed project to the eight scientific principles (see 2000 Columbia River Basin Fish and Wildlife Program, Basinwide Provisions, Section B.2) (Step 1)?*

*The eight Scientific Principles:*

1. *The abundance, productivity, and diversity of organisms are integrally linked to the characteristics of their ecosystem.*
2. *Ecosystems are dynamic, resilient and develop over time.*
3. *Biological systems operate on various spatial and time scales that can be organized hierarchically.*
4. *Habitats develop, and are maintained, by physical and biological processes.*
5. *Species play key roles in developing and maintaining ecological conditions.*
6. *Biological diversity allows ecosystems to persist in the face of environmental variation.*
7. *Ecological management is adaptive and experimental.*
8. *Ecosystem function, habitat structure and biological performance are affected by human actions.*

The sponsor’s response is often more of an endorsement of these principles than an explanation of exactly how the proposal is consistent with the principles.



*Principle 1. The abundance, productivity, and diversity of organisms are integrally linked to the characteristics of their ecosystem.*

The proposal does recognize this basic concept but has an emphasis on lower trophic levels. The proposal would be improved by further exploration of the relationship between food supply and survival/growth of the target species especially Chinook. Density-dependence within the 10 km reach is assumed – what is the evidence for this? Even if spawner abundance does increase in the reach, it is possible fry/presmolts could rear downstream and likely would do so if density-dependence was operating in the restored reach.

*Principle 2. Ecosystems are dynamic, resilient and develop over time*

The proposal recognizes this principle fairly well. The proponents realize that if the restoration project goes ahead it will be at least a decade until conclusions can be drawn about success. However, the implications of variation in and masking by factors outside the Yankee Fork (e.g., passage issues, marine survival) are not discussed in this context.

*Principle 3. Biological systems operate on various spatial and time scales that can be organized hierarchically.*

The proposal does not deal with the hierarchy of ecosystems very well. The connections between the dredged reach of the Yankee Fork and tributaries are well described, but the inclusion of this particular reach-tributary complex into upstream and downstream components of the Yankee Fork basin is not. As noted in an earlier ISRP report, salmon might pass right through the restored reach and spawn upstream. The progeny of these fish, however, might migrate downstream and rear in the restored reach. These intricacies and important details are not discussed.

*Principle 4. Habitats develop, and are maintained, by physical and biological processes*

The proposal shows the proponents have a good understanding of the hydraulic forces that shape and control the river bed and margin and hence riparian communities. Biological processes, such as density-dependent growth and food chains (e.g., relative role of autochthonous [algal production] versus allochthonous [terrestrial litter] organic matter to the support of higher trophic levels) is relevant for the main channel (see Attachment D, page 11).

*Principle 5. Species play key roles in developing and maintaining ecological conditions*

The proposal recognizes this fairly well. Mention is made of the importance of anadromous salmonids' in bringing marine nutrients to the upper reaches of the Basin. See also comments regarding principle 6 and the role of riparian vegetation as “keystone” species.

*Principle 6. Biological diversity allows ecosystems to persist in the face of environmental variation*

The establishment of riparian vegetation on the restored shoreline of the Yankee Fork would increase the biological diversity of the ecosystem and would also prevent erosion. At the level of fish species diversity, it seems all the original elements of the salmonid community are still present. However, data on non-salmonids are not given, so it is difficult to determine if the number of taxa might increase.

*Principle 7. Ecological management is adaptive and experimental*

The proposal does not recognize this well. Adaptive management is mentioned in passing, but no detail is provided as to how this process would be applied in the Yankee Fork project. The “upper end-mile one” seems to have been chosen as a pilot area according to Phase two of the Implementation effort given in Attachment C (this is in fact the only place where a pilot area is explicitly identified). However, no information is provided regarding the types of actions that will be evaluated in this pilot or how these evaluations will be conducted.

Although some evaluation of restoration effectiveness has apparently been done in the project area, very little information is provided on the results of these studies, and there is no indication that the findings have been incorporated into the current project design. More information is required on past restoration efforts in the Yankee Fork. The pond reconnection study by Richards and Cerner (1992) is mentioned in Attachment D. But no citation is provided, and results are not discussed.

Experimental management of the whole dredged reach of the Yankee Fork is not realistic. Once several acres of dredge spoil is moved it is unlikely that the spoils could be put back if things went wrong. A staged approach dealing with smaller pieces (e.g., pond connection or tributary access) coupled with careful evaluation of the habitat and biological response to these manipulations would enable the restoration actions to be improved over time. Flood plain reconnection work could be evaluated on a lower end of a tributary, at its confluence with the Yankee Fork.

*Principle 8. Ecosystem function, habitat structure and biological performance are affected by human actions.*

The proponents have made it clear that they understand the physical effects of gold dredging on salmon habitat in rivers. However, their explanation of long-term contaminant effects is weak. For example how does mercury get into the ecosystem from gold mining and what has the experience been elsewhere with this problem?

The proponents have not yet overcome the issue of land ownership-easements needed to secure habitat for ecosystem recovery in the restoration reach. Negotiations with the principal owner (Simplot) seem to have gone on for a long time and are still unresolved.

2) *describe the link of the proposal to other projects and activities in the subbasin and the desired end-state condition for the target subbasin (Step 1)?*

This is not really updated at all from the 2006 proposal it references, yet the Plan narrative describes many more links, some more current than 2006. Perhaps a simple list might be more informative, with the cross-references given for each project listed. The discussion of the relationship of this project to subbasin planning goals elaborates in some length on standards and principles but might more usefully state the specific end-state conditions to which this project would contribute. Other activities in the watershed are not discussed or even acknowledged.

The sponsors have used the time and funding since the last review to advance collaboration with partner action agencies and gather some public input. It is interesting that no environmental or outdoor-oriented organizations contributed. The environmental assessment is being considered and the work done since 2006 can contribute to that effort and to the permitting that would be needed for even a pilot project to start.

Another project in this watershed, the Salmon Supplementation Studies in Idaho Rivers Project (19890983) anticipates continuing steelhead supplementation. No mention is made of potential interactions between the supplementation study and the proposed Yankee Fork project. To what extent will the altered habitat and the anticipated increase in fish production complicate the interpretation of the data collected as part of the supplementation study?

The proposal lists the following aquatic objectives of the subbasin plan which will be addressed by the Yankee Fork project, “Rehabilitate water quality in affected reaches to conditions suitable to support designated beneficial use criteria” and “Reconnect the mainstem Yankee Fork with adjoining floodplain.”

The proposal links well with the second objective, but effects on water quality are not fully described in the proposal. Attachment E (called the YFRP Conceptual Design by the proponents but the Alternatives Analysis and Evaluation by their consultants) (p.14) mentions:

1. That a detailed site investigation of contaminants is needed (the proposal also mentions the need for a “site characterization”)
2. That some contaminant data were collected in 1986 and data from the survey were cursorily reviewed during development of the proposal
3. That the USGS has a report under review from 2001 and 2002

Water quality could be a major limiting factor for this project. For example, could a higher percentage of inorganic mercury in sediments and dredge tailings be methylated to the more toxic methyl mercury following habitat modification? Increases in organic matter and nutrients are known to increase the rate of methyl mercury formation.

Furthermore, selenium concentrations in some cases now have exceeded toxic thresholds. Water quality problems seem to be downplayed in the proposal.

- 3) *define the biological objectives (see 2000 Columbia River Basin Fish and Wildlife Program, Basinwide Provisions, Section C.2 (1) and (2), and Technical Appendix) with measurable attributes that define progress, provide accountability and track changes through time associated with this project (Step 1)?*

Biological objectives are not provided in the proposal; it simply describes proposed activities. This issue was identified as a key deficiency in a previous ISRP review. The response provided to this concern is assurance to the reviewers that data will be collected, but the response offers no more detail than the original proposal.

The Idaho State University M&E plan (Attachment D) is an incomplete one-off study and does not purport to develop an M&E plan and does not recommend one. In fact this study concludes that more research is needed on limiting factors before restoration at Yankee Fork is contemplated.

Physical attributes (current and desired) of the system are reasonably well defined. The proposal goes to great lengths to emphasize a focus on providing a comprehensive physical baseline to examine the changes that would take place following reconnection of the river with its floodplain. However, biological components (especially the critical ones of Chinook rearing and riparian woody vegetation restoration) are not adequately addressed, nor are measurable goals identified.

Identification of problems and limiting factors has not been adequately conducted by sponsors. In addition to concern regarding the (unaddressed) issues of mercury-selenium and downstream impacts of Yankee Fork sediment, there also is reason to question the basis for several objectives of the proposal. One objective is to increase the amount of spawning gravel, but no evidence is provided that it is currently in short supply. Stating that mean sediment size is larger than desired is one thing, but that does not preclude the possibility that there currently exist pockets of substrate that are adequate for increased numbers of spawning Chinook, both in terms of quality and quantity. Were pertinent data generated in the USFS studies by Barry and by Overton et al.? If so, they should be provided. Further, the previous habitat survey (Bechtel 1987) that was mentioned in Attachment E, but not discussed, apparently concluded that rearing habitat, not spawning habitat, was in short supply.

Increasing riparian vegetation is another key objective. The assumption appears to be made that peak flows prevent establishment of woody vegetation. That might be the case, but several other hypotheses (e.g., riparian tailings providing inadequate growth substrate, livestock/wildlife grazing, and ice scouring) exist that should first be examined. The proposed plan would follow a reduction of peak discharge (resulting from increasing floodplain connectivity) with riparian plantings, but only protecting 20% of the plantings from livestock grazing. That would be a mistake if there is significant grazing.

Increasing salmonid rearing habitat is another objective, and one that is clearly appropriate. But how much is needed is not addressed.

It would strengthen the proposal if soil bioengineering using live materials was considered, especially in restored meanders, and to see appropriate supporting references.

Proposal discussion regarding the extent of groundwater contamination deals rather summarily with the important issue of what contaminants may exist in areas through which the future restored watercourse may flow, given that restoration will probably involve “lost” meanders and enable future meandering through contaminated floodplain deposits. This is a very important issue and should be addressed more thoroughly. In addition, there could be reference to how such contamination might be remediated ahead of restoring stream sinuosity.

The “upper end-mile one” seems to have been chosen as the pilot area according to Phase Two given in Attachment C. The proposal does not describe what this is – presumably it is a dredge spoil removal. However, a tributary connect is said to be a promising opportunity from a cost benefit viewpoint (Attachment E, p.33).

*4) define expected project benefits (e.g. preservation of biological diversity, fishery enhancement, water optimization, and habitat protection) (Step 1)?*

No projection of expected adult returns owing to the restoration is given. Potential smolt numbers from the restored reach are given, but methods about how they were developed are not. The Betchtel (1987) and Reiser and Ramey (1987) reports (or report, they are cited as one and the same) seem to be key studies for smolt forecasts, but they were done some time ago and were not readily available for review.

Models such as EDT or more recent methods have not been used to explore production potential or expected returns. This situation is an example of where they would have been extremely useful.

Broad and unsupported claims are made of fish population enhancement resulting from the project. They are unsubstantiated and appear as wishful thinking. Benefits cited include “increase biodiversity,” “stabilize water quality” and “improve habitat for fish and wildlife.” The reader is then directed to the Conceptual Plan which does offer more detail on these and many other objectives. Those benefits could have been listed and cross-referenced in this section for readability.

- 5) *describe the implementation strategies (see 2000 Columbia River Basin Fish and Wildlife Program, Basinwide Provisions, Section D.2) as they relate to the current conditions and restoration potential of the habitat for the target species and the life stage of interest (Step 1)?*

The response does not appear to address this question and a table inserted here is not self-explanatory. The following statement from the Basinwide Provisions document is relevant to the Yankee Fork:

“Compromised habitat: Where the habitat for a target population is absent or substantially diminished and cannot reasonably be fully restored, then the biological objective for that habitat will depend on the biological potential of the target species.”

Full restoration of the entire dredged reach (10 km) may be unrealistic, and the proportion of the reach that can be restored is not known at this time. In addition, the proposal does not provide a defensible method for determining the biological potential of the species – only historical estimates of spawning numbers and ill-defined smolt production forecasts are given.

- 6) *address the relationship to the habitat strategies (see 2000 Columbia River Basin Fish and Wildlife Program, Basinwide Provisions, Section D.3) (Step 1)?*

The response is awkwardly written and rather perfunctory. The response to this element is confusing because the sponsors refer to the Implementation Plan in Attachment A p. 1-2 which is in fact their response to Principle #1.

- 7) *ensure that cost-effective alternate measures are not overlooked and include descriptions of alternatives for resolving the resource problem, including a description of other management activities in the subbasin, province and basin (Step 1)?*

Evaluation of alternatives was only partially done in the sense that it was only done by CH2M-Hill. They considered three “primary alternatives” – floodplain “reconnects,” tributary reconnects, and improvement of access to new and existing pond series. This was nicely presented but has some limitations. Floodplain reconnects are intended to aid in increasing spawning substrate and increasing riparian vegetation, and pond access work is intended to increase fish rearing, but no biological justification is provided for tributary reconnects. More importantly, the approach presented does not start with each major problem (each biological limiting factor) and then assess a range of possible physical habitat solutions, and finally choose the most effective. So we do not know if increasing pond access or the proposed new ponds are needed. We do not know if peak discharge would be sufficiently reduced by floodplain reconnects to enable more retention of spawning gravel or establishment of riparian vegetation.

Three additional alternatives, full and partial valley restoration (never explained) and no action, were “considered but not evaluated.” It may be that the no action alternative is the most cost effective, but a glaring weakness of the proposal is that it is not considered.

The pilot project is not described sufficiently to determine if the most cost-effective measures will be identified, as is claimed. The conceptual plan and associated exhibits provide estimates for the proposed actions and some estimate of relative benefits in terms of physical performance of the system, but these are not presented as alternative packages of possible alternative strategies.

The budget does not give total costs because management and M&E are not included. The total costs for this project could in fact be considerably higher.

*8) provide the historical and current status of anadromous and resident fish and wildlife in the subbasin most relevant to the proposed project (Step 1)?*

The same two projections are repeated frequently throughout various sections of the document but do not become any more convincing with repetition. The number of supplemented steelhead smolts released is given, but no data are given on their fate post-release. No wildlife data are presented although the sponsors anticipate that unspecified wildlife will benefit. However, the sponsors go on to cite the 2008 BiOp in one of the more useful and detailed responses to any of the Three-Step questions.

The proposal needs to show specific data on from past studies of juvenile surveys (e.g. Reiser and Ramey 1987) – data on smolts/yr from the whole reach are interesting but smolts/m<sup>2</sup> would be more meaningful for planning habitat restoration and assessing possible density dependence. These types of data have apparently been recently gathered but are not given in the report. No fish abundance data were provided except the indication that westslope cutthroat densities in dredged segment were 5-6 fish per 100 square meters and that is “slightly below” density in Yankee Fork tributaries.

Recent data on redd distribution are useful and show the importance of the dredged reach - 32% of all spawning (usually 6-19 redds, Attachment E, p. 9) occurs in the dredged reach, most concentrated downstream of tributaries.

*9) describe current and planned management of anadromous and resident fish and wildlife in the subbasin (Step 1)?*

The response does not answer this question. The proposal does a good job of describing the habitat management plans in the subbasin but would be improved by information on harvest management information. For example where are the spring Chinook in the Yankee Fork caught by commercial and sports fishers, and are there management plans for this aspect of harvest? The narrative describes local tribal harvesting only.

*10) demonstrate consistency of the proposed project with NOAA Fisheries recovery plans and other fishery management and watershed plans (Step 1)?*

Restoration of the dredged reach of the Yankee Fork is consistent with habitat recovery plans in the Subbasin. However many of the other restoration projects use some kind of quantitative model or analysis to forecast fish production, and recognize an upper limit. The proposal would be improved by a more analytical approach. The apparent qualitative estimates need to be improved – for example, Attachment A, p. 14 “This is the bottom line for the Yankee Fork Restoration Project, to sustain the Spring Chinook fish numbers once they are removed from the ESA list by restoring the Yankee Fork dredge tailings to accommodate **any number** (reviewers’ bolding) of Chinook salmon and Steelhead A.”

*11) describe the status of the comprehensive environmental assessment (Step 1 and 2)?*

The sponsor agrees that an environmental assessment will be done, presents an optimistic timeline and notes that some recently collected baseline data can contribute to that effort. It is not clear if the sponsor, a partner organization or contractor would do the assessment. It is not clear where the comprehensive environmental assessment is actually going to be done – in a pilot reach or the whole dredged reach?

*12) describe the monitoring and evaluation plan (see 2000 Columbia River Basin Fish and Wildlife Program, Basinwide Provisions, Section D.9) (Step 1, 2 and 3)?*

The Idaho State University M&E plan (Attachment D) is an incomplete study and does not purport to develop an M&E plan and does not recommend one. In fact this study concludes that more research is needed on limiting factors before restoration in the Yankee Fork is contemplated

*13) describe and provide specific items and cost estimates for ten fiscal years for planning and design (i.e. conceptual, preliminary and final), construction, operation and maintenance and monitoring and evaluation (Step 1, 2 and 3)?*

This is summarized in a table prepared as part of the conceptual plan and is described as representative only, not an accurate projection of actual future costs. The narrative response includes the phrase “...while reducing long-term operations and maintenance costs.” It is not clear what the reduced cost is relative to; are there current O&M costs? The various narratives frequently mention re-establishing a self-sustaining system, but that apparently does not exclude the need for O&M into the future. The proposal would be improved if more detail about future expenditures were given.



*14) provide a conceptual design of the proposed strategies and/or facilities (Step 1)*

The proposal does not provide a specific response to this element (“#14” cannot be found). The Alternatives Analysis (Attachment E) does describe the potential for floodplain reconnection, etc., but the results are given for the whole reach and a number of alternatives are described. The conceptual design is to be finalized based on work in a pilot area. However, the pilot area study is incompletely described in the proposal. The “upper end-mile one” seems to have been chosen as a pilot area (in Attachment C - this is the only place where a pilot area is explicitly identified), but no information is provided on what activities will be evaluated in the pilot or how this information will be used to inform the conceptual design.

Clearly, much more biological information and communication between biologists and engineers are needed before a conceptual design can be completed. Just proposing reconnection of stream and floodplain does not constitute even a conceptual design in reviewers’ minds. Are historical meanders to be replicated (possibly inappropriate, given the change in slope, etc.)? Is soil bioengineering to be applied to assist in bank stabilization, recovery of fines, early provision of shade etc.? One wonders how provisional estimates of project benefits could have been produced without a conceptual design.

*15) provide a preliminary design, including appropriate value engineering review, of the proposed facilities (Step 2)*

ISRP Comments: This is a Step 2 review element. According to the sponsor’s plan, the preliminary design is planned to be complete 2011; this design would consist of all actions within the 10-km dredge tailings stretch, assuming the pilot project has been determined a success.

*16) provide a final design of the proposed facilities consistent with previous submittal documents and preliminary design (Step 3)*

ISRP Comments: This is a Step 3 element. According to the sponsor’s plan, this would be provided at the end of 2011 once the pilot project is complete and they have determined the most effective approach for the project area.