Independent Scientific Review Panel
for the Northwest Power & Conservation Council
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Memorandum (ISRP 2014-3) **April 7, 2014**

To: Bill Bradbury, Chair, Northwest Power and Conservation Council

From: Greg Ruggerone, ISRP Chair

Subject: Review of a revised proposal for project #2000-031-00, Enhance Habitat in the North Fork John Day River

Background

In response to the Northwest Power and Conservation's February 19, 2014 request, the ISRP reviewed a revised proposal from the Confederated Tribes of the Umatilla Indian Reservation for Project #2000-031-00, *Enhance Habitat in the North Fork John Day River*. This project's purpose is to protect, enhance, and restore functional floodplain, channel, and watershed processes to provide sustainable and healthy habitat and water quality for aquatic species in the John Day River sub-basin. The revised proposal is intended to address the Council's recommendation and the ISRP's qualifications from the Geographic Review (ISRP 2013-11; August 15, 2013).

In its previous review the ISRP commented, "*There are potentially many good aspects to the proposal, but the proposal's narrative and the responses to several of the ISRP's qualifications are unclear. The main qualifications are that the sponsors need to better explain the proposal rationale and to enlist the collaboration of specialists to aid in project implementation and evaluation. It is also important that relevant RM&E efforts outside this project are well coordinated with project activities listed in this proposal. More specifically, the sponsors need to address several issues that arose from their responses to the ISRP's questions on the original proposal.*" Responses were requested for nine specific issues.

Recommendation

Meets Scientific Review Criteria (Qualified)

A strategic framework is needed by the end of 2014 as a means to guide the next steps in this restoration project. The ISRP feels that this framework should involve all key issues necessary for a successful and efficient restoration program. While many aspects of a framework are

articulated in the sponsors' current proposal, a strategic framework needs to address the following qualifications:

Qualifications

1. **Provide a report that clearly describes future Project monitoring and evaluation actions, and provide a time line for integration with CHaMP and ISEMP and other ongoing monitoring and evaluation programs**. Currently, there is discussion of project level implementation and effectiveness monitoring, and discussion of a CTUIR Fishery Habitat Program's Physical Habitat Monitoring Plan and CTUIR's Fishery Research Bio-Monitoring Plan developed to mesh with larger scale plans and protocols in place or under development (CHaMP, ISEMP and EMAP). However, there is no clear summary of anticipated monitoring and evaluation actions that will be used for this project and little detail on the specifics of future actions. A strategic framework should address plans for project scale implementation and effectiveness monitoring and evaluation and specific actions and timelines for integration with other ongoing monitoring programs, especially CHaMP and ISEMP but also some discussion of other programs such as PIBO and EMAP. (Note: it is understood that this final element may require assistance from the broader CTUIR Restoration program managers).

2. **Provide a report that summarizes the results of past project and major findings from implementation and effectiveness monitoring of completed projects (with appropriate statistical analyses).** This report should focus on information provided in the individual project "Result reports" in the proposal. The summary should include a listing of major findings and lessons learned over the 10+ years of restoration work and a discussion of how the lessons are being used to improve future habitat restoration in the North Fork John Day River (NFJD).

3. **Provide a report that clearly articulates the strategy for restoration activities in the four priority Watersheds (Geographic Areas – GA's).** A strategic framework is immediately needed that draws upon available information, partner knowledge, and past project experiences to guide and prioritize future tasks associated with watershed-scale restoration. Additional detail is needed to fully develop this framework for action. As noted in the 2013 ISRP review, "*The activities, while individually important, are not treated as an integrated network of sites and actions chosen for their effectiveness at meeting clearly stated goals.*"

   In developing the strategy, the sponsors should consider:
   - focusing efforts in high priority areas
   - using integrated, larger scale projects to increase chances of creating restoration impacts big enough to measure their collective effectiveness
   - additional narrowing of geographic focus of work (e.g., using 1-2 sub-watersheds within the current group of 4 priority watersheds)
   - incorporating priority protection and passive restoration actions on public lands[1]

[1] These are mostly National Forest System lands on the Umatilla and Malheur National Forests that make up 62%s of the land base in the subbasin. These Forests are currently revising their Forest Management Plans (see draft

- the importance of controlling non-native fish and vegetative species in achieving restoration goals and appropriate actions needed
- a phased restoration approach which emphasizes habitat reconnection as a dominant early activity (as suggested in the 2013 ISRP report)
- description of specific measures to ensure relevant RM&E efforts outside this project are well-coordinated with project activities listed in this proposal, and
- discussion of specific measures to enhance technical capacity of the project including possible formation of a science advisory group or technical support team and other approaches to enlist the collaboration of specialists to aid in project implementation and evaluation.

4. **Provide a more complete discussion and definition of responsibilities and roles of various entities involved in North Fork John Day restoration, including the CTUIR Department of Natural Resources.** This is particularly important in the areas of technical capacity and support, data management, and monitoring and evaluation. This could be included in the strategy framework requested in Qualification No. 3.

5. **Provide expected outputs/accomplishments for Deliverables 1, 2, 3, and 4.** There are no expected outputs/accomplishments for Deliverable 1, 2, 3, and 4. These constitute more than 50% of the requested budget for 2014-2018. There need to be quantitative estimates of expected outputs/accomplishments for these deliverables. One suggestion would be to develop a couple of peer-reviewed professional publications. This would be a good way for the sponsors to undertake a self-assessment, clarify progress and shortcomings, and consider plans for future activities.

6. **Provide information on data management that is responsive to the previous ISRP requests.** It is stated, "*…. efforts are underway through CTUIR Information Technology and on-site data coordinator to standardize and improve data storage and documentation practices.*" Unfortunately, the revised proposal offers little additional detail as to what is actually planned, when this work is to occur and who is taking the lead (Project personnel or the CTUIR Info Technology group). There is no information regarding responsibility and capacity for data analysis and reporting. The sponsors did not meet the ISRP request that "*these elements should be fully articulated in a revision to this proposal.*"

General Comments

A number of previous ISRP comments point to the need for a more comprehensive strategic framework to guide multi-year restoration activities. These include: "*…. should proceed in prioritized stages or program phases. CTUIR should prioritize actions and implement them as a means to develop expertise and better achieve success. The activities, while individually*

Plan at http://www.fs.usda.gov/detail/wallowa-whitman/landmanagement/planning/?cid=stelprd3792957) creating a major opportunity to ensure the incorporation of measures/actions that support watershed/aquatic habitat protection and restoration in the revised Plan.

important, are not treated as an integrated network of sites and actions chosen for their effectiveness at meeting clearly stated goals." Also, "*A coherent discussion of the strategy for selecting and prioritizing restoration sites would have improved the proposal.*" Some information was provided on how the four priority watersheds (Geographic Areas) were selected and how projects were selected. However, additional detail is needed to provide a comprehensive strategy to guide restoration and to increase the likelihood of seeing positive results on the ground. Focusing work into only one or two of the priority watersheds could be considered and would increase the likelihood of completing enough work in one place to make a real difference in habitat and fish populations at a sub-watershed scale. Additionally, upslope issues associated with roads, timber harvest, wild fire, and grazing need to be integrated into the overall strategy, particularly where there is intent to influence processes affecting habitat quality and its maintenance in the long term. The Forest Service is actively involved in the revision of management plans for the Wallowa-Whitman, Umatilla, and Malheur National Forests, and there is a major opportunity to ensure closer coordination and support, as well as to have the revised plans be sensitive to, and to complement, investments in habitat protection and restoration. Draft revised plans are currently out for public review (www.fs.usda.gov/detail/wallowa-whitman/landmanagement/planning/?cid=stelprd3792957). Review and comment on these plans are especially important given that more than 60% of the subbasin is in National Forest System lands.

The revised proposal more clearly identifies specific tasks that will be undertaken. These tasks are largely identified as deliverables. Although the activities proposed in the new document consist of a wide range of actions, it remains unclear how the sponsors prioritized their selections. While the restructured proposal is an improvement over the previous version in terms of providing an understandable summary of the implementation, it falls substantially short of articulating an integrated and comprehensive program – one that can demonstrate whether fish populations and habitat conditions are improving or will improve. Shortcomings that should be addressed include:

- The quantifiable objectives should describe desired ecological outcomes (what is expected from individual and collective actions) and be stated in quantitative terms with an expected timeframe for their accomplishment. Ecological hypotheses are not established and, therefore, cannot be explicitly tested. At present, the objectives are not quantitative (but the Deliverables are technically quantitative).
- Reference sites (when needed) are not included in the design.
- The selection of restoration actions evidently remains largely subjective rather than based on a process like a Decision Support System or modeling predictions to identify high priority areas or expected fish responses.
- While monitoring has been conducted at many sites, analyses of the results are presented but not formally evaluated. For example, evaluation of project effectiveness was significantly limited by the lack of quantitative objectives describing expected results and time frames. Additionally, there is no summary of findings from an evaluation process that could be tied to project objectives or individual treatment types (fencing, riparian planting, bank stabilization, and so forth).

The ISRP's requests for additional information about the previous proposal were not addressed in a supporting cover memo for the revised proposal and, in several instances, it was difficult to find responses in the new document. For future submittals, the ISRP would appreciate a cover memo with brief responses to ISRP concerns and references to sections in the revised proposal where the concerns are addressed. There remain a few instances where more information is needed (see comments below) or where direct responses are needed for the most recent qualifications. For example,

- The sponsors have not provided a coherent discussion of the strategy for selecting and prioritizing restoration sites. In particular, since the North Fork John Day supports significant areas of high quality habitat, it would be helpful to know how the project sites are located relative to these habitats and whether the location of these areas has been considered in site selection.
- While the sponsors summarized a number of habitat enhancement actions and described the outcomes of these actions to date, either with monitoring data collected since 2007 or with pre-and post-project photographs, essentially no statistical or other quantitative results were presented. What are the plans for data analysis? The project needs to establish a comprehensive model or institute Structured Decision Making, in conjunction with adequate monitoring and application of significant findings, to guide actions and evaluate outcomes. It is not clear if the Riverine Planning Approach is adequate (see below).
- Although the sponsors appropriately recognized climate, non-native plants, predation, and toxic chemicals as emerging limiting factors in this proposal, these factors are already present at significant levels. As such, they should be addressed by program actions. It remains unclear if they are the focus of any Deliverables.
- In proposals that involve a variety of disparate habitat actions, some of which cannot be evaluated, it would be useful to organize the report by treatment type (fencing, culvert replacement, riparian planting, and so forth). This could be accomplished by indicating the percentage of proposed time and effort for implementation and monitoring, and the amount of scientific evidence supporting each action (either from the site or from the literature), thereby providing reviewers with a better sense of which actions need more monitoring and which actions would perhaps need none.

The sponsors are commended for their attempt to accommodate within this proposal all the restoration strategies developed for the North Fork John Day. Nevertheless, it is not clear to the ISRP how the sponsors make the decision on which specific actions to undertake. Later in the proposal, the Riverine Planning Approach is mentioned, but it is not clear how selected actions were chosen. The ISRP would like more clarity on this issue.

The roles and responsibilities of personnel and cooperators should be outlined and clearly presented (Page 27), and a timeline and schedule should be developed as part of the planning process before specific actions are initiated. Further, the division of roles and responsibilities

between project personnel and those in the main offices of the CTUIR, especially those in the Department of Natural Resources and Information Resources, requires clarification. It would seem that issues related to monitoring and evaluation, coordination with other programs, technical assistance, and data management have elements that relate to both levels of the CTUIR organization. A careful review of particular skills and resources, and how to apply them most effectively to the NFJD project, would be useful to all involved. Confusion about roles and responsibilities could jeopardize successful completion of the project.

The sponsors state (Page 27) that "*The Bio-Monitoring of Fish Habitat Enhancement (BPA Project #2009-014-00) has been developed to investigate the effectiveness of habitat actions on anadromous fish populations. Information gathered and reported through this project in combination with other outputs from the M&E Program have provided and will continue to provide important information to the Habitat Program for restoration action prioritization and development.*" As noted earlier, more comprehensive analyses are essential to demonstrate project effectiveness.

Why has a "loss assessment" not been completed (Page 29)? It seems that this would be fundamental to long-term planning.

Page 45: Provide details on subcontracts. This is an important issue. Who are the subcontractors and what are their credentials? A significant proportion of the restoration is being undertaken by subcontractors (over $1M), and the sponsors should provide clear evidence that the subcontractors are able to do the jobs effectively and on time.

Evaluation of Responses to Previous ISRP Concerns

1. Project Goals and Objectives

> *Response No. 2. The goal is much broader than the stated objectives of the project. The goal should be revised to reflect a balance with the objectives, or vice versa. As presented the objectives are not comprehensive enough to attain the goal.*

Although a comprehensive, stand-alone Goal Statement was not provided, there is clear documentation that the project intends to improve habitat by addressing physical and biological processes responsible for its condition and maintenance over time. This appears to be an appropriate umbrella for the project's objectives.

As stated in the Executive Summary, "*The primary goal of the Project is to restore viable habitat to support harvestable native anadromous and resident species.*" It is assumed that "*viable*" habitat means conditions that will be maintained through natural processes over time. Achievement of this goal is presumably guided using the Umatilla River Vision and its five touchstone elements, which relate to important habitat forming elements and processes. In the Short Description of the project, it is stated, "*Project works to protect, enhance, and restore*

functional floodplain, channel, and watershed processes by improving aquatic and terrestrial habitats in the North Fork John Day River Basin." These statements all provide a generally appropriate description of the project goal(s).

Nevertheless, for future reference, the proposal would be improved through development of a single Goal Statement that includes the key elements of the above information, currently provided in separate statements.

> *Response No. 3: The objectives should be stated in quantitative terms and time lines provided. As stated, the Deliverables are generally fine, but since the Objectives are not stated quantitatively, these need to be so. Quantitatively recasting the deliverables as environmental benefits or improvements expected to be realized after the individual projects are completed is essential to evaluate the project success.*

The project objectives still are quite general and are structured more like goal statements. They do not provide a quantitative and measurable description of anticipated outcomes nor do they provide an expected time frame for their expression on the ground. Some detail about the expected accomplishments is provided as metrics for implementation (miles of stream restored, number of sites for passage restoration, acres of riparian area to be planted). These are deliverables but do not describe the expected ecological results (desired outcomes) from the restoration work. As shown on the proposal form, the directions in Taurus are:

"*Objectives should be stated in terms of desired outcomes, rather than as statements of methods and work elements (tasks). In addition, define the success criteria by which you will determine if you have met your objectives.*"

Some examples of quantitative objective statements could include, for the treated area, increase pool area by at least 50% and pool volume by at least 100% within 5 years of project completion (channel restoration); achieve an average of 90% vegetative ground cover and 70% stream surface shading within 15 years of project completion (riparian planting); restore volitional passage, for all species and life stages of anadromous fish, to 2.3 miles of XX Creek following completion of project work (fish passage).

2. Results since 2007

> *Response No. 5: The ISRP would still like to see the monitoring results collected since 2007. Please provide appropriate metrics and data to show that the restoration actions are making progress.*

BPA directions for addressing project "*Results*" are: "*List each objective and summarize accomplishments and results for each one, including the projects previous objectives. If the objectives were not met, were changed, or dropped, please explain why…..Whenever possible, describe results in terms of the quantifiable biological and physical habitat objectives of the Fish and Wildlife Program.*"

Unfortunately, although there is a good deal of post project assessment and monitoring information provided for restoration actions since 2007, it is not summarized by individual project objectives, or, treatment types. Additionally, since the objectives are not quantitative, it is difficult to determine whether they were met in the expected time frame. The lack of clearly stated quantitative objectives, a shortcoming in this proposal and many others, significantly impairs the ability to determine if specific treatments did what they were expected to do.

A substantial amount of quantitative monitoring data is provided as part of project implementation and status and trend monitoring. As stated in the proposal, "*data collected by the Project are used only for design efforts and Status and Trend monitoring to track general site conditions and gross habitat conditions over time with the scope of inference confined to the project area….*" A baseline assessment process utilizes six elements (vertical X-sections of the channel, sediment size and distribution, riparian vegetation, surface and hyporheic flows, photo point documentation and spawning surveys) and appears to have been regularly conducted on past projects. The monitoring tables are clearly presented, including means and standard deviations. Although the data are provided, they are not statistically analyzed or even interpreted as to the response or what was gleaned from the response to aid in adaptive management. Additionally, most projects had photo-point series for selected treatment areas. Unfortunately, there were no pre-treatment photos at many project sites or (semi-)quantitative analyses of the photos. As presented, the monitoring appears perfunctory rather than an activity to evaluate effectiveness and to be learned from.

In some cases, where changes since 2007 were dramatic, analyses may be straightforward. However, in detecting subtle responses, careful analyses are needed to assess if the results were random changes or, in the case of trends, if they were statistically significant and biologically important. Analyses may, in some cases, require the services of a statistician to address issues of covariates. In any such analyses, one concern that specifically needs to be addressed (and remedied in the future) is that for specific projects (e.g., anadromous fish) the design does not explicitly include control or reference sites. Several projects do not have pre-treatment information; reference sites (where needed) are not included in the restoration design; and the reported metrics do not include fish – often the key restoration target. Controls are vitally important if the metrics are anadromous fish responses to restoration actions. Data analyses would be highly beneficial both in assessing past actions, and in providing information on whether future actions should be pursued (because they are effective) or not pursued or altered (because they have not been effective).

Discussions regarding "ecological outcomes" for each project demonstrate an effort to note general responses to various restoration treatments and to find reasons for the various treatment responses. Unfortunately, there was no summary of findings by project objective or treatment type and setting. Given the long history of the project and the relatively large number of sites with similar treatments, such a summary would help to guide future efforts and to provide historical background to document how treatments had been modified over time for various conditions and settings.

The statement on Page 2 that "*Unfortunately, entities operating on grant funding do not have the capacity to develop and undertake long term intensive monitoring plans*" is, in itself, not justification for inadequate monitoring. The monitoring does not need to be intensive, but basic metrics of physical and biotic restoration responses do need to be adequately measured and analyzed on a sustained basis. Also, a well-designed project that is adequately monitored and progressive (using adaptive management) is more likely to be supported for future funding from various entities.

In Taurus, the number of "red" deliverables is high (Page 6). While the sponsors provide explanations for the higher than usual percentage in the "red" category, it appears that the sponsors could anticipate and proactively deal with similar issues if they arise in the future.

3. Non-native fishes

> *Response No. 7: What is being done to control or eradicate non-native fishes? If this is an important issue with respect to the recovery of native salmonids, as it seems to be, it should be a program component.*

The issue is addressed in the revised proposal: "*With regard to non-native aquatic species, those within the NFJD are largely limited to warm-water species within the mainstem NFJD and in higher elevations where brook trout were planted in the past. These areas are largely outside of The Projects focal GA's although where they do exist, they have and will continue to be considered relative to a proposed action's influence upon non-desirable species and consecutively, desirable species.*"

The response is generally adequate. However, the relative importance of non-native fish relative to meeting project goals (viable habitat to support harvestable native anadromous and resident species) should have been discussed. If non-native fish issues are significant, a decision needs to be reached on how to address them in a manner that complements ongoing habitat restoration efforts. For example, are restoration actions benefiting non-native species more than the targeted native species?

With regard to non-native aquatic species (Page 28), the sponsors should also consider non-native riparian species. The ISRP suspects that there are a large number of riparian invasives with important consequences for aquatic ecosystems.

4. Use of fish data in habitat M&E

> *Response No. 9: The response does not address the question about how fish monitoring data are used to evaluate the effectiveness of habitat projects and only partially addresses specific collaborations between projects. The ISRP needs more fully developed responses to these questions in order to evaluate the proposal. As well, the ISRP expects that considerable ongoing collaboration will occur among the various programs.*

As indicated above, the analyses of monitoring data are insufficient. The tables and figures showing status by year are helpful, as are means and standard deviations. However, there are no data analyses. As more data are collected, opportunities for analysis will increase. For example, there is limited use of fish monitoring data to help determine the effectiveness of habitat restoration treatments. There is no discussion regarding the use of other fish monitoring data such as those from Project 1998-016-00: "*Escapement and Productivity of Spring Chinook and Steelhead.*" There is some discussion about making CTUIR protocols consistent with those of CHaMP but none regarding integration of efforts. Overall, there was limited discussion regarding collaboration among this project and other ongoing monitoring efforts in the North Fork John Day.

The bottom line is that a comprehensive and coherent monitoring program is needed to determine the effectiveness of treatments to restore habitat and fish populations and to assist in demonstrating attainment of project objectives. This program should be well-coordinated with other ongoing efforts in the John Day and North Fork watersheds. For this to happen, there needs to be assistance and direction from the broader CTUIR Restoration program. It is not apparent in the proposal that such assistance has occurred, or when it is likely to occur.

The general nature of collaboration with ODFW and others was identified in several key instances, but few details were provided. Quite a bit of coordination seems to occur within working groups and during interactions with other agencies. It appears that the sponsors meet regularly with others conducting restoration work in the North Fork John Day and that most coordination occurs when restoration projects are selected. A more formal program of information sharing and project coordination could be useful given the complex nature of the work and the many participants implementing restoration.

5. Relationship to other M&E programs

> *Response No. 10: The ISRP would appreciate clarification to the following issue: The sponsors state that they will reconcile their monitoring plan with other habitat monitoring plans such as CTUIR's Fisheries Habitat Monitoring Plan, CHaMP and ISEMP, but more description is needed on what will be done.*

Although the revised proposal provides a brief description regarding reconciliation of CTUIR Monitoring programs with CHaMP or ISEMP, additional detail is needed on monitoring specific to the North Fork John Day project; see ISRP Qualification #1 above. The proposal states (Significance to Other Regional Programs) that:

"The CTUIR Fishery Habitat Program's Physical Habitat Monitoring Plan and CTUIR's Fishery Research Bio-Monitoring Plan (BPA Project #2008-014-00) are being and have been developed to mesh with larger scale plans and protocols in place or under development. The Physical Habitat Monitoring Plan identifies monitoring protocols at the reach scale while recognizing the value of such as the Columbia Habitat Monitoring Program (CHaMP), (CHaMP, 2011) protocols at the site level and those of larger scales such as Environmental Monitoring and Assessment Program (EMAP) (EMAP, 2002). The bio-monitoring plan uses metrics and methods identified in CHaMP to identify the influence of implemented actions upon aquatic populations and will be conducted by the CTUIR's DNR Fishery Research Program as such monitoring cannot be completed adequately by the Fishery Habitat Program."

There is a need and continuing opportunity for more formal and regularly scheduled sharing of information and technical resources. Given the relatively large number of restoration players (agencies, groups and Tribal governments) there is likely a range of multi-disciplinary skills potentially available for use in project work such as project design reviews and in assistance in more complex design, implementation and monitoring/evaluation of projects. There are numerous ways this can be accomplished and a general strategy/schedule should be adopted.

6. Cost sharing and data management

> *Response No. 15: The details of cost-sharing, who will do the work among the partners, and timelines for completion, are not provided under Response No. 3. Please provide them.*
>
> *Response No. 16: Issues of data management, as requested in the ISRP qualification, are not addressed under Response No. 5. They should be described in a response.*

Projected cost share information is provided for 2014-18 but is limited to cost sharing with the US Forest Service. The new proposal states, "*elevated funding levels have improved the Project's ability to undertake more complex tasks and plan for out-year efforts to better utilize cooperator and in-house capacities.*" It is assumed that the increased funding will also expand opportunities for sharing costs with other entities likely to be involved in project activities.

According to the proposal (”Results” section), cooperators/partners in the 2000-2012 work period included the Oregon Department of Wildlife (ODFW), Umatilla and Wallowa-Whitman National Forests (UNF, WNF), North Fork John Day Watershed Council (NFJDWC), The Nature Conservancy, Soil and Water Conservation Districts (SWCD), the Natural Conservation Service (NRCS), and numerous private land owners. Additional detail on likely cost-sharing opportunities and participants should be provided as planning progresses for 2014-18.

Concerning data management, see comments associated with qualification number 6.

7. Additional specific issues to be addressed in a response:

The ISRP is surprised by the relatively limited amount of restoration that has taken place over the previous decade. This unexpected finding was also noted in our comments on the last proposal. For example, on page 2, the sponsors note that “37,400 native plantings have been planted by The Project or their cooperators.” This equates to only about 3-5 acres of natural density vegetation being planted over 11 years. The scope and treatment intensity of many of the other restoration actions appear modest considering the time elapsed and the funding received.

On page 3, it is stated that the EDT Model was used to estimate Chinook abundance. Why do the sponsors believe the estimates are too low?

For Objective 8 (Hyporheic), why complexity rather than flows? The narrative addresses flows rather than complexity. If complexity, state why that is important. Later on (page 30) the sponsors discuss measuring water temperatures. These are not water flows. Flow data are important, but the approach employed is not suitable.

For Objective 9 (Floodplain Storage), it is never stated what is being stored. Is it water, sediment, wood, or some other material?

In the Table on Page 9 (and elsewhere), why are some boxes shaded and not others? Also, what is an "ocular" estimate? How much error is associated with it? Further, on Page 10 and elsewhere, the ISRP is not sure what the photo-points are trying to show. All require an explanation of the message the sponsors are attempting to convey. Basically, the messages to be conveyed by these tables and photos are not apparent.

What is a "temporary data disturbance" (Page 18)?

Where is the Riverine Planning Approach described (see Page 27)? Has it been peer-reviewed for robustness and applicability to restoration effectiveness? As presented, it seems more like a conceptual process that may or may not be followed (or useful) depending on the issue at hand. The ISRP would like to see a description of its usefulness and limitations, and a reference as to where it was published.

Densitometers (Page 30) do not measure species composition, as suggested here. Likewise, temperatures are not water flows. Flow data are important, but the approach being used is not suitable. Concerning photo-points, why not make them quantitative? It would be more convincing and not much additional effort.

The sponsors are correct that many of the sampling protocols are well defined in the literature (Page 30). So why is additional effort expended to develop them? It seems that resources could be used more effectively elsewhere.

Site-scale methods do not account for catchment-scale processes either (Page 30). What efforts are taken to incorporate catchment-scale processes (e.g., land use, landslides) in the evaluations?