



**Independent Scientific Review Panel**

for the Northwest Power & Conservation Council

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## Review of Fiscal Year 2006 Proposals for the Estuary and Columbia Cascade

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# **Review of Fiscal Year 2006 Proposals for the Estuary and Columbia Cascade**

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## Review of Fiscal Year 2006 Proposals for the Estuary and Columbia Cascade

### Introduction

At the request of the Council and the Bonneville Power Administration (BPA), the ISRP completed a review of four proposals seeking Fish and Wildlife Program funding in Fiscal Year 2006 to meet goals specified in the Action Agencies' Updated Proposed Action (UPA) for the Federal Columbia River Power System Biological Opinion Remand, November 2004. Three of the proposals are habitat projects in the Columbia Cascade Province intended to help achieve tributary habitat metric goals for Upper Columbia spring Chinook and steelhead. These are the Whitehall Wells, Eniat 4-Mile Wells, and Little Bridge Creek Fence proposals. The fourth proposal is for a pilot research, monitoring and evaluation study to achieve specific goals in the lower Columbia River and estuary. A fifth proposal, Project 2003-114-00, Acoustic Tracking for Studying Ocean Survival, was submitted recently, and an ISRP review will be completed in early December.

Two of the Columbia Cascade proposals were previously reviewed by the ISRP (see ISRP 2005-9: [www.nwcouncil.org/library/isrp/isrp2005-9.htm](http://www.nwcouncil.org/library/isrp/isrp2005-9.htm)) but were found to lack sufficient information to conduct a scientific review. Although these two proposals were significantly improved for this review, the ISRP restates its general concern from the earlier review that this type of off-cycle, ad hoc project selection process used to select the Columbia Cascade proposals could erode the improvements in the proposal review process gained over the past eight years with respect to coordination, accountability, transparency, and fairness. The importance of this ISRP comment became especially clear when new ISRP members, who were first time reviewers, asked questions about how the projects were selected and prioritized over other potential actions and strategies.

ISRP reviews are based on a determination that projects:

1. *are based on sound science principles,*
2. *benefit fish and wildlife,*
3. *have a clearly defined objective and outcome,*
4. *include provisions for monitoring and evaluation of results, and*
5. *are consistent with the Council's fish and wildlife program.*

In the text below, the ISRP provides comments and recommendations on the individual proposals. In summary, the ISRP finds the Entiat and Whitehall Wells proposals to be fundable, the Little Bridge Creek Fence proposal to be partially fundable, and the Estuary RM&E Pilot Study to be not fundable.

## Estuary RM&E Pilot Project (2005-001-00)<sup>1</sup>

### Background

The Estuary RM&E Pilot Project is intended to address the ecological importance to Snake River fall Chinook salmon of shallow water habitats in the 100-mile tidal freshwater reach of the Columbia River downstream of Bonneville Dam. BPA initiated this new project to achieve specific goals in the Action Agencies' Implementation Plan for the Updated Proposed Action relating to research, monitoring, and evaluation (RME) mandates in the lower Columbia River and estuary (LCRE; RM 0-146). The Sandy River delta was tentatively chosen as the pilot study site because little research and monitoring on subyearling salmon has occurred or is underway in the area of interest (RM 46-146), there is a major habitat restoration project ongoing there with potential for significant restoration of shallow water habitat for juvenile salmon, and the site is downstream of locations where thousands of subyearling salmon will be tagged and released as part of other studies.

A general description and need for this project is included in the Action Agencies' Plan for Research, Monitoring, and Evaluation of Salmon in the Columbia River Estuary (Estuary RME Plan) (final draft August 10, 2004). The ISRP participated in an iterative review of the Estuary RME Plan. The ISRP and the ISAB first reviewed a September 2003 draft of the Estuary RME Plan during their review of the Action Agencies/NOAA Fisheries RME Plan in fall 2003 (ISAB/ISRP 2004-1).<sup>2</sup> The joint ISRP and ISAB found that the overall structure of the draft plan was reasonable and provided a good framework within which to develop a plan, though fundamental pieces were missing and the organization of the document needed to be reworked. The plan was subsequently revised and submitted to the ISRP for review. The ISRP's report, dated November 18, 2004, found the revised plan to be a significant improvement over the previous draft. The ISRP stated, however, that the Estuary RME Plan was still "a plan to develop a plan," a discussion about the desired elements of a plan, rather than a plan itself. In other words, much work needed to be completed before a workable plan could be implemented. Most relevant to the proposal under review, the ISRP expressed their support for a pilot project in the estuary and emphasized that research was needed in the section of the estuary extending from RM 46 to Bonneville Dam. The proposed RME Estuary Pilot Project intends to address the upper estuary below Bonneville Dam.

### ISRP Review Comments on the FY06 Proposal

#### *1. Is the Project based on Sound Scientific Principles?*

##### *a. Technical and Scientific Background*

The problem being addressed by this proposal is well defined. A major cause of the decline of salmon in the Columbia River basin is considered to be destruction of estuarine habitat that is used for rearing by downstream migrating salmon, particularly by subyearling migrants. Most of

<sup>1</sup> [www.cbfwa.org/mods/components/forms/DisplayWYOngoing.cfm?ModID=334&action=final](http://www.cbfwa.org/mods/components/forms/DisplayWYOngoing.cfm?ModID=334&action=final)

<sup>2</sup> [www.nwcouncil.org/library/isab/isab2004-1.pdf](http://www.nwcouncil.org/library/isab/isab2004-1.pdf) - A Joint ISAB and ISRP Review of the Draft Research, Monitoring & Evaluation Plan for the NOAA-Fisheries 2000 Federal Columbia River Power System Biological Opinion

the work on fish use of estuarine habitat, however, is focused on the lower estuary and little is known about habitat use in the upper estuary (the area 100 miles below Bonneville Dam influenced by tidal flux).

The sponsors propose to address this problem by determining fish use of shallow water habitats by subyearlings at the Sandy River delta. This information will be used in developing a pilot-monitoring program for the delta area. The proposed work is justified by several recovery and restoration documents such as the *Mainstem Lower Columbia River and Columbia River Estuary Subbasin Plan* and the *Biological Opinion on Operation of the FCRPS*. This section, however, would be improved if the authors would more clearly state whether the priorities referred to in these plans are “high” priorities. In addition to the aforementioned plans, the ISRP and ISAB have repeatedly called for research in the upper estuary. The initial phase of the research for which FY 2006 funding is being requested will attempt to determine whether fish are using shallow water habitats in the delta area.

The sponsors provide a reasonable synthesis of work in the lower estuary and identify a number of generalizations that have so far arisen from this research. A central finding of the lower estuary research is that shallow water areas such as tidal marshes and swamps provide important habitats for fish rearing and growth. The sponsors propose to determine whether this generalization holds true in the upper estuary. This is a reasonable extrapolation but it must be remembered that the upper estuary is freshwater, although it is subject to tidal flux, and the array of habitat types is likely different from the lower estuary as the area has been subject to different hydrologic and geomorphic forces. Fish behavior and habitat use also may be different because the fish are not as well adapted to saline conditions and the food base in the upper estuary, particularly at the Sandy delta, is likely more of a freshwater prey base than in the lower estuary. Because of the uncertainties about fish use of habitats in the upper estuary, a study focusing on use of a broader array of habitats may be more applicable than one focused solely on shallow water areas. The sponsors do not define “shallow water” so it is difficult to ascertain what kinds of habitats are encompassed by the phrase.

The literature review is somewhat narrow and reveals some lack of understanding of standard freshwater fish ecology methods, i.e., microhabitat assessment. The reference citations in the proposal could be improved. Many of the references are gray literature, unprocessed (draft) reports, or unpublished memos that were not provided with the proposal, and are difficult (if not impossible) for others to access. The authors should avoid citing textbooks (e.g., Quinn 2005) and literature reviews instead of the original data sources. The list of bullets on p. 3 would be more authoritative if they included citations to the original publications/reports of data that support these conclusions. Although this pilot study focuses on Snake River fall Chinook salmon, the background information is very general, including all “ocean-type” salmon populations and species (e.g., chum salmon). The proposal would be improved if the authors could summarize technical and scientific background information specific to sub-yearling Snake River fall Chinook salmon. There are a few missing references (e.g., USFS 1996, cited on p. 5; Jay and Kukulka 2003, cited on p. 5; is this Kukulka and Jay 2003?; LCREP 1999, cited on p. 5).

*b. Rationale and Significance to Subbasin Plans and Regional Programs*

The proposal directly responds to numerous plans that call for research and monitoring in the lower Columbia River estuary. These plans include the Northwest Power and Conservation Council’s *Fish and Wildlife Program*, the *Mainstem Lower Columbia River and Columbia River Estuary Subbasin Plan*, and *NOAA-Fisheries Biological Opinion on Operation of the FCRPS*.

The *Action Agencies' Implementation Plan for the Updated Proposed Action*, developed in response to the *Biological Opinion*, specifically calls for a pilot project studying the use of the Sandy River delta by subyearling migrants. The level of priority of the pilot project in the *Action Agencies Plan* is not given and thus the relative importance of the proposed work in the plan is unknown.

*c. Relationships to Other Projects*

The proposal cites relationships to a number of ongoing projects in the lower Columbia River estuary. It maintains that the proposed work will complement, but not duplicate, the ongoing projects because the proposed project is in the upper estuary.

The relationship to other projects is moderately well described. However, the proposal did not help to resolve confusion about how it relates with past work because it is referred to as the "Estuary RM&E Pilot" in some places (e.g., title and abstract) and the "Tidal Freshwater Pilot Monitoring Study" elsewhere (e.g., Section 9i). The relationship to Project 2003-114-00, Acoustic Tracking for Studying Ocean Survival, should be described. Specifically, the relation between this proposal's and the ocean array project's use of acoustic tags needs to be discussed.

The proposal does not describe in detail how integration with the related projects will occur. The only mechanism put forth is the workshop that may or may not be an effective means of integration. It could be more meaningful to plan potential joint fieldwork, analyses, and publications as well as the workshop.

*d. Project History*

The project began in May 2005 with the contract executed in August. The project history section of the proposal describes accomplishments anticipated by September 2005. The accomplishments to date should be given in the proposal since the deadline has past.

*e. Proposal Objectives, Tasks, and Methods*

*i. Clearly Stated Objectives and Outcomes*

The objectives of the work are spread throughout the proposal and need to be consolidated. Five objectives, apparently the major ones, are given near the beginning of the proposal while other objectives are provided as part of the Work Elements. The Work Element objectives should be tied specifically to the five major objectives. Most objectives, when they can be found, are clear and feasible with the exception of major objective 2.

Major objective 2 proposes "research on action effectiveness." The sponsors must clearly explain what "research" on action effectiveness is and how it is distinguished from action effectiveness monitoring. Further confusing the issue, the sponsors propose to develop an "experimental design" for this research again without clearly defining exactly what the research will consist of. Finally, there are no methods for this objective. In the past the ISRP has not looked favorably on proposals to develop research plans and there is no reason to depart from this practice for this proposal.

Some of the objectives are a confusing mix of monitoring and research. The first of the five major objectives purports to be *Status/Trends Monitoring and Critical Uncertainties Research* but in fact the clearly stated purpose is to conduct research on

fish use of shallow water habitats. The latter work is important; however, the association between research on fish habitat use and Status and Trend Monitoring needs to be clarified. The sponsors also state “we propose a pilot monitoring study for the tidal freshwater portion of the Columbia River basin.” No such study was proposed, although the work on fish use could be used in development of a pilot program.

The objectives of the proposal need to be consolidated, and the purpose of the work made clearer and more focused. The latter will require disentangling research from monitoring objectives. The proposal is principally for research and should be developed as such. The research, however, could be relevant to development of a monitoring program. Other than testing hydroacoustic telemetry equipment, there is little about the project that actually involves development of a monitoring plan and thus the purported focus of the work and the objectives are somewhat misleading.

*ii. Methods (Work Elements)*

*Study Site Selection:* The concept of a pilot monitoring project outlined in the Plan for Research Monitoring and Evaluation of the Salmon in the Columbia River Estuary recommended implementing a modified EMAP sampling design and integrating it with action effectiveness research in the estuary. Rather than using EMAP methods to choose the sample locations for the proposal under review, it appears that the Sandy River delta was selected because of its location in the tidal freshwater, the presence of shallow water habitats, and the fact that terrestrial restoration is occurring at the site. The Action Agencies deem it an important area where work is worthy of funding.

Many sites in the upper estuary meet most of the criteria used to select the Sandy River delta and a better justification for selection of the Sandy delta is needed. How representative of habitats in the upper estuary is the delta? Were other sites considered and, if so, why were they rejected? One memo (Casillas 2004) seems critical to the selection of the study site and hypothesis that “the tidal freshwater area of the lower Columbia R. estuary is important to subyearling fish.” Perhaps this memo should be included in the proposal package. Did Casillas identify other important sites in the upper estuary?

A study in the Sandy delta certainly presents an opportunity; however, because so little is known about habitat conditions for downstream migrants, a larger scale investigation is needed. Specifically an investigation that documents the array of potential habitats, their physical characteristics, and their use by fish throughout the upper estuary would be a more appropriate initial study rather than one focused solely on a single site that may not represent the array of potential habitats. As a result, it is not clear how well the sponsors would be able to generalize the results with confidence to other areas in the upper estuary. Thus, the sponsors confidence that, “If juvenile subyearling salmon are not present or reside for a very short period of time at any of the sampling locations, the implication is that habitat restoration activities in the tidal freshwater portion of the Columbia River may not benefit upriver salmon stocks” is unjustified. The methods described in this proposal are not sufficient to test this hypothesis, or to understand how the results of this study will be compared to the results of other studies.

*Coordination (Work Element 118):* Methods for coordination seem to be rather weak and dependent on others for implementation, e.g., COE and through AFEP. Project scientists could be taking more of a leadership role.

*Project Management and Administration (Work Element 119):* Project management plans could be more explicit.

*Annual Report (Work Element 132):* An annual report seems appropriate but why not propose a short peer reviewed paper as a product as well? There could be some unique results obtained quickly from this relatively unknown habitat.

*Data Collection and Validation: (Work Element 157)*

*Task 1: Collect beach seine and snorkel data*

*Sampling Locations at the Delta:* The sponsors propose to sample by seine and snorkeling three sites at the delta. Two of the sites are in or near the delta (at the mouth of the slough, near the main channel). A “pristine” site upriver of the delta will be used as reference site. The sponsors need to define why the site is pristine and how the data from this site will be used in the analysis. Will it be compared to the other two sites and what will such a comparison reveal?

One goal of the proposed work is to assess whether fish are indeed using shallow water habitats in the Sandy delta. Selection of sampling sites at the delta is critical because inadequate sampling could lead to erroneous conclusions concerning fish use. Given the lack of knowledge about fish habitat use in the upper estuary, the chances of detecting fish use will be optimized if a greater variety of locations were to be sampled. Selection of sampling sites should be based upon a broad scale survey of delta habitats. Habitats should be mapped and their physical characteristics determined. Sampling sites representative of a variety of habitats and locations could then be selected. Alternatively, an EMAP procedure for randomly selecting sample sites within the delta could be used. In any event, a broader sampling of delta habitats is warranted.

The sponsors consider shallow water habitats (not defined-how deep is shallow?) to be the principle habitat for downstream migrants based on findings in the lower estuary. This may, in fact, be the case, but other types of habitats also may be important. The broader and more important question is what types of habitats in the upper estuary are fish using, at what times of the year, and under what environmental conditions, for example river flows.

*Sampling Methods:* The sponsors should state whether the proposed snorkeling methods and 37-m beach seine have been used successfully at other study sites in the lower Columbia River estuary to sample/survey sub-yearling Chinook salmon in shallow water habitats. The 37 m beach seine should be suitable for the slough sampling but a longer net might be needed for the deeper channel (river side). The larger fish will be found in the deeper water and this may be where most of the tagged fish will be found. Without efficiency studies using marked fish it is difficult to see how numbers per unit volume can be estimated from seine sampling.



How will snorkel surveys provide information on fish movement? How will snorkel surveys be used to determine capture efficiencies? The snorkel surveys are supposed to determine microhabitat use. However, standard methods for freshwater microhabitat measurements are different than those proposed. Usually “real” microhabitat measurements are obtained at a focal relative to a single fish. What is being proposed here will be useful but should not be called microhabitat work. Will other species of fish be sampled, specifically potential predators like pikeminnow and smallmouth bass?

It is not clear how frequently the samples will be obtained, i.e., monthly or semi-monthly (both are proposed in various places in the proposal). In several places the authors describe “semi-monthly” sampling. What does this mean? Is this sampling frequency adequate to evaluate presence or absence of subyearling Chinook salmon at the study sites? For example, how will the sampling scheme account for difference in behavior or habitat use that vary by tidal level, flow, daylight level, etc.?

Why is tissue for genetic analysis being collected? How will fish from Snake River stocks or other stocks be identified?

*Task 2: Deploy and test acoustic telemetry equipment and collect telemetry data*

According to the proposal, the acoustic telemetry research is dependent on two Corps studies (EST-P-02-01 and TPE-W-06-02) that will tag and release Chinook salmon at Bonneville Dam. The proposal would be improved if the authors could more clearly describe specific coordination activities with these projects and contingency plans if these projects fail to tag sub-yearling Chinook salmon

Acoustic sampling will likely provide the only detailed spatial and temporal information, but is the proposed release of 1000 acoustically tagged subyearling Chinook sufficient to detect presence or absence at the study site? An alternate approach might be to try and follow the migration of the tagged fish. Will the behavior of the fish be affected by the acoustic tags? How will the stock composition, body sizes, migration timing, etc., of acoustically tagged fish influence the results of this pilot study? What is the backup plan for using allocated resources if no tag data are obtained.

Acoustic telemetry equipment and software are described, but the proposal would be improved if the authors could include citations and references for the acoustic equipment and software (manufacturers, technical specifications, etc.) and the results of laboratory experiments described on p. 24.

*Task 3: Collect ancillary data during seine and telemetry fieldwork.*

Environmental and ancillary data that will be collected are given in this section. Depth and bottom topography should be discussed. These parameters are central to the research. GIS should be able to display depth profiles that will enable determination of the extent of shallow water habitat (which is not defined). The

parameters that are listed as ancillary data need to be justified. Specifically, the proposal should describe how the parameters are used to typify habitat, why the parameters were chosen, and whether they have been shown to be related to fish use. Vegetation data obtained by others would seem to be key to habitat description but they are not mentioned as ancillary data. If the restoration project is well integrated the vegetation data should be supplied to the sponsors.

*Data Analysis and Interpretation (Work Element 162):*

The analyses that will be conducted need to be clearly spelled out. What are the habitat types that the seine data will fall under?

**2. Does the Project have Provisions for Monitoring and Evaluation?**

The sponsors do not propose a specific M&E program even though M&E is explicit in the objectives. In reality, the sponsors propose to conduct research that evidently will be used to develop a pilot-monitoring program. The proposal, however, provides very little information on the monitoring program that apparently will be associated with the proposed work or how the aquatic monitoring will integrate with the on-going terrestrial effort.

It is not clear how the presence/absence monitoring performed under this proposal constitutes effectiveness monitoring for the Sandy River delta restoration, or how the data collected is needed to develop a design for subsequent effectiveness monitoring. It is also not clear how the results from beach seining and acoustic sampling will be contrasted and then used to decide on subsequent designs of monitoring – whether that be status and trend monitoring or action effectiveness monitoring.

Unfortunately the proposal does not present a clear justification for how the data collected is actually the sort needed to form the basis for designs to be developed and employed in subsequent years. For the broader goal of providing an estuary pilot RME project as outlined in the Plan for Research, Monitoring, and Evaluation of Salmon in the Columbia River Estuary review by the ISRP (2004; ISRP 2004-9) this proposal is insufficient.

Finally, establishing a monitoring program to yield data that can be used to determine the ecological importance of shallow water habitats to subyearling Chinook salmon is an ambitious task. This topic is a resource selection problem that will require a sophisticated experimental design (for example, see Manly, B. L. McDonald, D. Thomas, T. McDonald, and W. Erickson 2005. *Resource Selection by Animals: statistical design and analysis for field studies*, Kluwer Academic Publishing), Baltz 1990 (Baltz, D. 1990. *Autecology*, pages 585-600 in C. B. Schreck and P. B. Moyle, editors. *Methods for fish biology*. American Fisheries Society, Bethesda, Maryland). This proposal needs to outline how the ecological importance of shallow water habitats will be analyzed, and how this pilot investigation will contribute to the analysis.

*f. Facilities, Equipment, and Personnel*

Project personnel are briefly described, but resumes of key personnel were not included in the proposal. From what the ISRP knows of the personnel, however, they appear to form a well-rounded and experienced team (except for microhabitat work) with good credentials and track records of work in the lower estuary. It is unclear, however, whether they are experienced in working in the upper estuary and performing the functions needed for successful accomplishment of the proposed work in that location. The exact role of Dr. Skalski is not well described. He is expected to provide statistical advice on the study design, but no details on what

this means are provided, e.g., will power analysis to guide sampling frequency be conducted or will he just focus on tagging aspects of the study? Facilities and equipment are well described

*g. Information Transfer*

Explicit plans are provided for meta-data collection and electronic archiving. This aspect of the proposal is clearly explained. Do plans for information transfer from the pilot study include only the preparation of an annual report?

**3. Benefit to Fish and Wildlife**

The project could be of considerable benefit if it were properly designed and conducted. The upper estuary below Bonneville likely provides important holding and rearing habitat for downstream migrants. Research on the use of habitats in this area by downstream migrating fish, however, is sparse. Results from studies of tidal freshwater habitats (if justified) should provide detailed guidance to restoration projects and ensure that required ecosystem elements and habitat patterns that benefit salmonids are in fact being rehabilitated.

Because this is a pilot study, the proposed project is likely to have only short-term benefits for the focal species (subyearling Chinook salmon) and no adverse effects to other (non-focal) species of fish and wildlife. Suitable precautions have been taken to minimize effects on focal native biota, e.g., measuring salmon in a graduated cylinder, live release and other safeguards. Beach seine data on abundance of non-salmonids and salmonids other than Chinook will generate new information on fish communities and ecosystems in the tidal freshwater reaches. Ancillary environmental data (temperature, substrate type, TGP) will also be new additions to data banks.

**ISRP Recommendation**

Although the need for work in the estuary is well justified, the proposal in its current form has numerous technical problems and consequently the ISRP would regard it as not fundable. The major technical difficulties include objectives spread diffusely throughout the proposal. Although most objectives are clear and reasonable, some of the objectives tend to mix research and monitoring and so it is unclear what those objectives really intend. The sampling design is poorly justified especially as it pertains to selection of the location of the study site at the Sandy River delta and selection of sampling sites within the delta. It is unclear how well the results obtained from this study can be extended to other areas of the upper estuary. The methods are not adequately explained and statistical analyses are lacking. The proposal provides very little information on the monitoring program that apparently will be associated with the proposed work. Nor does the proposal present a clear justification for how the data will be used to form the basis to design a monitoring program. For the narrow task of determining the presence/absence of subyearling Chinook, the proposal has a clearly defined objective. For the broader goal of providing an estuary pilot RME project as outlined in the Plan for Research, Monitoring, and Evaluation of Salmon in the Columbia River Estuary review by the ISRP (2004; ISRP 2004-9) this proposal is not adequate.

## Whitehall Wells (2005-004-00)<sup>3</sup> and Entiat 4-Mile Wells (2005-003-00) <sup>4</sup>

### Background

These two projects were revised and resubmitted in response to an earlier ISRP review. Specifically, in an April 26, 2005 letter to BPA, the Northwest Power and Conservation Council did not endorse these projects because the ISRP stated that these projects had biological merit, but that the proposals were not technically justified and therefore, were “not fundable” as submitted.

### ISRP Review Comments on the FY06 Proposals

Because these two proposals are nearly identical, the ISRP provides one set of comments and one recommendation for both.

#### *1. Sound Science*

##### *a. Technical Background*

The proposal contains appropriately greater detail, context, justification, and linkage to basinwide and Subbasin planning than the previous submission to Council for ISRP review. The Whitehall Wells project will construct three irrigation wells to eliminate four surface irrigation diversions currently in operation. Installation of groundwater wells was chosen over installing a new fish screen based on expected biological benefits and overall lower financial costs. The Entiat 4-mile Wells project will construct two irrigation wells to eliminate a surface irrigation diversion.

The proposals directly point to the potential harm from diverting juvenile Upper Columbia steelhead, spring Chinook and bull trout out of channel as a problem with current surface diversions (the Entiat River is a known spawning site for these species). As such this project would directly remove the diversion/entrainment risk. As a secondary benefit, the project also would reduce in-channel impacts (habitat and passage) from annual operation and maintenance of an in-stream pushup dam.

There is some information that should be clarified to enhance this (and future well-construction proposals). First, no hard data (numbers, stage, time of year, etc.) are provided or referenced as to the direct impact to focal species by the surface diversion pumps. Second, no specific information was provided as to how much flow is presently diverted (total, daily average, seasonal variation, etc.) for the Whitehall Wells (while ~0.7 cfs of flow will no longer be withdrawn from surface flow during pump operation of the Entiat 4-mile Wells). Third, no specific information was provided as to whether the surface flow presently diverted from the current facilities would remain instream for fish and wildlife benefit after the wells are installed. While not specifically a “technical” issue, per se; it can affect technical merit if returned flows are reclaimed as a landowner right in the future. Such information should be provided by project sponsors.

##### *b. Rationale and Significance relative to Subbasin Plans and BiOp:*

The proposals identify important components from the Entiat Subbasin Plan and address expressed critical needs (i.e., fish passage, in-channel habitat loss, and riparian vegetation loss)

<sup>3</sup> Whitehall Wells: [www.cbfwa.org/mods/components/forms/DisplayWYOngoing.cfm?ModID=335&action=final](http://www.cbfwa.org/mods/components/forms/DisplayWYOngoing.cfm?ModID=335&action=final)

<sup>4</sup> Entiat Wells: [www.cbfwa.org/mods/components/forms/DisplayWYOngoing.cfm?ModID=336&action=final](http://www.cbfwa.org/mods/components/forms/DisplayWYOngoing.cfm?ModID=336&action=final)

identified in the Plan for four focal species (those listed above plus westslope cutthroat trout). The projects cite earlier assessments such as the Entiat Limiting Factors Report (Andonaegui 1999), which listed unscreened and inadequately screened surface water diversions as a direct threat to native salmonids. The 2003 Upper Columbia Biological Strategy (RRT 2003) states that irrigation diversions have the most tangible impact on in-stream flows. The subbasin strategy reports uncertainty regarding the impact of irrigation withdrawals on in-stream flows and (water) temperature. The 2004 Entiat Subbasin Plan lists reducing impacts of withdrawal among the 10 primary strategies recommended. Further, that plan discussed the potential impact of thermal barriers to fish when summer flows decline. Importantly, BiOP metric credits are justified.

*c. Relationship to other projects*

The Whitehall Wells project is linked with and similar to the Entiat 4-mile Wells project.

*d. Facilities, equipment, and personnel*

These are identified in a general way within the proposal. There is contribution from several entities including the landowner.

**2. Benefit to Fish and Wildlife**

The projects' primary benefits are predicted to be for focal salmonid species through avoidance of juvenile diversion risks from currently operated surface pumps and entrainment risks from installing screens. The wells should also lessen instream impacts from annual operation and maintenance of push-up dam, as well as improving passage for focal and other species. Ultimately, considering the location of the Whitehall Wells project, it would be expected to convey benefits for any other aquatic species that migrate through the lowermost reaches of the river, especially to reach the productive spawning and rearing habitat in the Middle and Upper Entiat, as well as the Mad River tributary system.

The primary unaddressed uncertainties are whether operation of pumps will, in fact, keep flow in the channel (water withdrawal rights waved and groundwater wells having no effect on flow from seepage, etc. -- a hydrologist should be able to answer the latter). Moreover, wells might reduce groundwater seepage to the river during low flows, reducing possible temperature amelioration by additional of cooler water, even as potentially increased instream flow might reduce heat gain to some extent. Such information should help clarify whether anticipated benefits to focal species are real relative to the property value benefits to the landowner.

**3. Clearly Stated Objectives and Outcomes**

The objectives and expected outcomes are straightforward and clearly described as above.

**4. M&E**

Given the scope and scale of the project, an intensive monitoring and evaluation program unique to these projects (with formal hypotheses and controls) is probably not warranted here. As such, project monitoring and evaluation should proceed within the context of larger watershed or Subbasin M&E activities. If this method (constructing wells) is to be used more broadly, however, a robust assessment of its benefits to fish and impacts to local or subbasin hydrological regimes may be warranted.

The project provides for monitoring through the Pacific Northwest Aquatic Monitoring Partnership. The Lower Entiat River is part of the PNAMP Network of Intensively Monitored

Watersheds. Additional monitoring will be included as part of the Salmon Recovery Funding Board's Effectiveness Monitoring requirements for the Chelan County Conservation District (CCCD) proposed Phase 1 of the Entiat River Bridge to Bridge reach restoration project in the lower mainstem Entiat River. Pre- and post-project monitoring of the Bridge to Bridge project is occurring in 2005, which may be able to detect changes that occur from the Entiat 4-mile project."

To address effects of groundwater withdrawal on local water table, monitoring of water table is recommended to avoid future conflicts among local landowners and wildlife uses of the groundwater rights.

**ISRP Recommendation:** Fundable

## Little Bridge Creek Fence

### Background

The Little Bridge Creek Fence Project is intended to provide BPA and the Bureau of Reclamation with a FCRPS BiOp metric credit of 4.8 for the riparian enhancement limiting factor.

### ISRP Review Comments

#### *a. Technical and Scientific Background*

This proposal calls for excluding cattle from about 2.7 linear miles of Little Bridge Creek, a tributary of the Twisp River in the Methow subbasin. The enclosure will consist of fences, a cattle guard, gates, and other devices built according to USFS and NRCS standards. There is a perceived problem for bull trout, steelhead, and possibly spring Chinook from degraded conditions (excessive fine sediment, lack of shading, and damage to riparian vegetation) in Little Bridge Creek. The technical background is, however, marginally adequate to evaluate the project. More information on the status of the ESA-listed stocks in the Twisp River and Little Bridge Creek is needed. The number of fish projected to benefit from the project is not very well described. The project leaders state that "at least 27 steelhead redds" have occurred in this reach of Little Bridge Creek, but this number is based on a personal communication with no otherwise supporting data and no indication if that observation occurred in a high escapement or low escapement year. Additionally, project managers do not explain whether the Twisp River hosts core source populations for the remaining bull trout, west-slope cutthroat trout, and steelhead in the Methow subbasin, or if they represent weak remnant units. In other words, is this a project to conserve a stronghold or a project to rehabilitate degraded habitat and hope for rebuilding of weak stocks?

Although levels of fine sediment present in spawning gravels upstream and downstream from the creek's confluence with the Twisp River are given, it is not clear to what extent this reach of the stream has been negatively impacted by grazing. Because sediment and temperatures specific to the reach are not presented, it is difficult to estimate the purported benefits of the proposal.

*b. Rationale and Significance to Subbasin Plans and Regional Programs*

The need to improve instream habitat conditions that was presented in the Methow Subbasin Plan is adequately referenced. Removing grazing damage, particularly if it impacts an important salmonid spawning site, is surely beneficial. Where Little Bridge Creek falls within the locations prioritized for habitat restoration is not clear in the proposal, however. Was this site chosen for cattle exclusion because it is critical for fish recovery, or primarily because it had a convenient location and willing landowner?

*c. Relationships to Other Projects*

Other projects in Little Bridge Creek were adequately discussed. Where this restoration action fits in the Twisp watershed and Methow subbasin could be described in greater detail.

*d. Project history – new project*

A summary of whether similar projects in the Methow Subbasin have provided a measurable benefit is not included, and would make evaluation easier.

*e. Proposal Objectives, Tasks, and Methods*

*i. Objectives.* There are clearly defined and measurable objectives regarding the building of the fence, but there are only general objectives regarding physical habitat restoration and recovery of fish populations. There are no goals or time lines for changes in habitat characteristics or fish populations.

*ii. Methods.* Construction techniques are adequately described in most cases. Some estimate of what proportion of the fence would be anchored by live trees (as opposed to posts) would have been helpful.

*iii. Monitoring and Evaluation.* The monitoring plan is generally adequate. Executing the monitoring depends on SRFB funding and the long-term need to monitor riparian vegetation recovery.

*f. Facilities, Equipment, and Personnel*

Overall, the project managers seem qualified.

*g. Information Transfer*

There was no indication of how riparian or instream data for Little Bridge Creek or the Twisp River below the confluence would be archived and made available.

*Consistency with Power Act Amendment Criteria*

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| 1. Sound Science Principles              | Yes  |
| 2. Consistent with Program               | Yes  |
| 3. Benefit to Fish and Wildlife          | Yes (no discussion of the fence’s effect on wild animal movements -- potentially negative) |
| 4. Clearly defined Objective and Outcome | Somewhat   |
| 5. Provision for M&E                     | Contingent on outside funding  |

*Project Costs*

Although the ISRP does not base technical recommendations on project costs, the ISRP feels that the cost of this project warrants further examination by the Council and BPA. The total project cost, including matching funds, is almost \$164 K. This equates to almost \$33 K per mile of fence and ancillary structures. That figure seemed very high to the ISRP based on previous experience with fencing projects. The budget breakdown reveals high costs for administration (\$21 K), design (\$8.5 K), NEPA compliance (\$4 K), pre-construction monitoring (\$4 K, or \$1.6 K per mile of stream), fence installation (\$81 K, of which almost \$57 K will be spent on labor even though some of the work will be performed by a conservation district youth crew, as well as \$3.5 K for “mileage”), and post-construction monitoring (\$15 K, although it is not clear if part of the monitoring costs will be offset by the USFS or SRFB). Additionally, the proposal states that some trees will be cleared for the fence (will logging revenues be applied to project costs?) and some live trees will be used to reduce the need for fence posts. Overall, the amount requested from BPA (\$146,579) seems quite high in relation to the area affected by the project and uncertainty in the benefits obtained from it.

**Recommendation**

The ISRP judges this proposal to be partially fundable. Protecting an important steelhead spawning area is worthwhile, but the proposal makes a less-than-convincing case that the Little Bridge Creek fencing project merits priority funding within the Methow Subbasin. Additionally, the very high cost of the proposal suggests that project managers may wish to explore less expensive alternatives that could produce the same ecological benefits.