

Bruce A. Measure
Chair
Montana

Rhonda Whiting
Montana

W. Bill Booth
Idaho

James A. Yost
Idaho



Dick Wallace
Vice-Chair
Washington

Tom Karier
Washington

Bill Bradbury
Oregon

Joan M. Dukes
Oregon

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March 3, 2011 (clean version)

Review of Research, Monitoring and Evaluation and Artificial Production Projects Draft decision document

Introduction and Summary of status of the review (as of March 3) highlighting the near-term decisions before the Council

Pursuant to Section 4(h)(10)(D) of the Northwest Power Act, the Northwest Power and Conservation Council has been engaged in a review of research, monitoring and evaluation and artificial production projects that implement the Council's *Columbia River Basin Fish and Wildlife Program*. This is a draft of the document that, when final, will contain and explain the Council's recommendations to the Bonneville Power Administration for the funding and implementing of these projects for Fiscal Years 2012 through 20xx.

Part 1 below provides the background on the review, including the description of these two categories, the projects reviewed, and the review process.

Part 2 covers programmatic issues. As has been true in the past, the review of the individual projects illuminates a set of broader policy or programmatic issues that affect the Council's review and recommendations for a collective set of the projects. Part 2 describes these programmatic issues and possible resolutions, for Fish and Wildlife Committee and Council consideration at this time. The final version of this document will contain the Council's decisions on these programmatic issues, which in certain cases will then be conditions or recommendations that accompany the relevant project recommendations.

Part 3 of this document will contain and explain the Council's recommendations for the funding and implementation of the individual projects, along with a description of the available budget and budget issue. Associated with this part of the draft decision document are a set of spreadsheets that list the projects reviewed in this category, with proposed budgets and other information, and with comments about each project developed during this review. The tables will eventually include a Council recommendation for each project, as well as conditions or comments to be considered a part of the recommendation, more fully explained in Part 3. As also described in Part 3, at this stage in the review process (early March) the staff is continuing to work on a subset of projects in this review that appear ready for Fish and Wildlife Committee consideration and recommendation in a special meeting in early April and then final Council decisions at the April Council meeting.

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Finally, Part 4 will contain the formal explanations by the Council responsive to the specific requirements of Section 4(h)(10)(D) of the Northwest Power Act. This includes the written explanations required of the Council in those few instances in which the Council's project funding recommendations do not follow the recommendations of the Independent Scientific Review Panel. The Council will also explain how it complied with the requirements in Section 4(h)(10)(D) to "consider the impact of ocean conditions on fish and wildlife populations" and "determine whether the projects employ cost-effective measures to achieve program objectives" when making project funding recommendations.

Summary of status of the review (as of March 3) highlighting the near-term decisions before the Council:

"A list" of projects

The plan right now is for the Council to make recommendations in two steps. Following the ISRP review report and public comment period, a staff review has identified a significant number of the projects in the RME/AP review as ready for consideration for recommendations by the Council's Fish and Wildlife Committee in March and early April 2011, and then for a Council decision at the April Council meeting. A spreadsheet identifying this "A list" of projects (and the rest on the "B list") has been provided as part of Part 3 of this document.

The projects on the "A list" are those not touched by or subject to an overarching programmatic issue still be in need of resolution, and which do not present project-specific concerns that still need resolution in further staff review. The staff recommendations for the projects on the A list are all consistent with the ISRP's recommendations.

The staff recommendation for most of the "A list" projects is for the Council to recommend funding, albeit many with conditions and comments noted in the comment field on the spreadsheet. These comments and conditions are based in the ISRP review or in a set of coordinated Council/Bonneville staff reviews of the projects and project history. A few projects on the "A list" come with a staff recommendation not to fund, most often because the work has been or will soon be completed and the project needs to wrap up.

See Part 3 below for further discussion and context.

Programmatic issues related to artificial production and lamprey projects on the "A list"

There are a number of projects on the "A list" (as of early March) that are subject to the programmatic issue for either the lamprey or the artificial production projects. We believe these are programmatic issues that are ripe for resolution along with the "A list" of projects. The programmatic issues and proposed resolutions are found in Part 2 below. The artificial production issue is #4, and the lamprey issue is #8. At this point staff has the programmatic recommendation

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related to these projects either resolved or in a form in which we expect to be able to resolve it by the time of decision in April.

Form and duration of the multi-year project recommendations

One overarching issue with regard to the individual projects is the form and duration of the recommendations. Making a decision on the “A list” of the projects will by necessity include also deciding on the form and duration of specific project recommendations.

Staff will be proposing multi-year funding recommendations for the RME/AP projects that extend from FY2012 to possibly FY 2017. The duration of any particular project recommendation will vary from one to six years depending on the type of project, the project conditions, when the project is due to be completed, and if there is delivery of a product to review prior to a recommendation for additional years of funding.

The project recommendations brought forth by staff will be based on sound scientific principles, Fish and Wildlife Program review, and other considerations articulated during the process. Collectively, this work is intended to support and address the Council’s Fish and Wildlife Program, as also integrated with the requirements of the FCRPS Biological Opinion and the commitments made by Bonneville with the parties to the Columbia Fish Accords.

The staff recommendations will not include individual project budgets or annual budgets. A multi-year funding recommendation that does not set a particular budget allows Bonneville and the sponsors flexibility in contracting and spending over the life of the project recommendation. Bonneville may also identify areas for cost savings within the work elements and the funding conditions identified by staff. In each case, Bonneville will have the flexibility to negotiate with sponsors through contracting to finalize work and budgets. Actual spending by Bonneville for each project should be sufficient to maintain project integrity as the ISRP reviewed it. With any multi-year funding recommendation, staff recommends the Council include the following general expectations:

1. The ISRP’s science review of the projects is sufficient for the duration recommended for the project. Additional review generally will not be needed for the duration of the recommendation, with two exceptions: (1) when the project recommendation is conditioned upon the ISRP reviewing a deliverable (such as a comprehensive management plan) within or at the end of the funding period, or (2) when new components outside of the scope or intent of the project at the time of this review are proposed by the project sponsor or Bonneville during the funding period. In these cases, the delivered product or the new project components will be reviewed by the ISRP and a recommendation made by the Council prior to further funding.
2. Bonneville will provide start-of-year budgets for each project in this portfolio prior to beginning of the next fiscal year, which should also include: (1) trend information to show how and why the overall budget will change from the previous year, and (2) how inflation and cost-of-living adjustments are to be applied, if any.

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3. Bonneville will work with the Council to track and follow-up on items or project conditions that require the sponsor to deliver products as part of the funding recommendations.
4. Bonneville will work with sponsor to address ISRP qualifications and other conditions during contracting when and as recommended by the Council.
5. Bonneville will provide adequate funding to maintain the integrity of the project as reviewed by the ISRP and recommended by the Council.

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Part 1: Background -- Categories, Projects, and Review Process

Under Section 4h of the Northwest Power Act, the Council develops a program to “protect, mitigate and enhance” fish and wildlife affected by the hydroelectric facilities on the Columbia and its tributaries. Section 4(h)(10)(A) of the Power Act then calls on the Bonneville Power Administration to use its fund and other authorities to protect, mitigate, and enhance these same fish and wildlife “in a manner consistent with” the Council’s fish and wildlife program. Bonneville directly spends hundreds of millions of dollars every year to fund mainstem and off-site mitigation projects that implement measures in the Council’s program, along with associated research, monitoring, evaluation, and coordination projects.

Section 4h(10)(D) of the Northwest Power Act then directs the Council to review projects proposed for funding by Bonneville to implement the Council’s Fish and Wildlife Program. The Council engages in this review with the assistance of its Independent Scientific Review Panel (ISRP). The Council and Bonneville work together to develop the information necessary to make this review process successful.

Past review processes have taken many forms including program-wide solicitations, review of projects by geographical organization (the rolling provincial review), and targeted solicitations. Beginning in 2009, the Council and Bonneville, with advice from the ISRP, decided to review projects in functional categories (wildlife, monitoring, evaluation and research, artificial production, resident fish and blocked areas), to be followed by a review of certain projects, especially habitat actions, organized by subbasin and province. The central purpose of the broad category reviews is to highlight issues apparent only by looking at similar projects collectively, such as duplication and redundancy, relevance and relative priority, coordination, consistency of approach and methods and costs, and collective consistency with the broad basinwide objectives and strategies in the Fish and Wildlife Program. Organizing the reviews by category also recognizes differences in project types, especially highlighting those with longer-term commitments. The category reviews thus focus on existing commitments, as well as clearly identified proposals for similar commitments to fill program gaps. Many of these existing commitments are of many years’ standing and have been the subject of numerous reviews in the past. So an important function of the category reviews is to evaluate project results and how well the projects have adapted proposed future work based on those results, and how well the project sponsors have responded to the scientific and management issues identified in previous reviews. The scientific and administrative review for the category projects should enable the Council and Bonneville to make long-term funding decisions and establish appropriate longer-length review cycles for many of these projects.

In June 2010, the Council and Bonneville together began this review of projects in the categories of research, monitoring and evaluation and artificial production (also known as the RME/AP Review). The Council’s 2009 Fish and Wildlife Program focuses in particular on implementation and performance and commits to developing a better monitoring and evaluation framework for the Fish and Wildlife Program. The goal is improved reporting on progress and effects under the Program and improved decisionmaking on actions in an adaptive management fashion. Reviewing the collective set of research, monitoring and evaluation projects was a logical extension of this commitment. The Council and Bonneville are also using the category review of research, monitoring and evaluation projects to ensure that projects implemented under the Program

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meet the performance tracking and adaptive management needs and commitments of the 2008 Federal Columbia River Power System (FCRPS) Biological Opinion as well as the Fish and Wildlife Program. The Council decided to include the Program's artificial production projects in this review as well, as the monitoring and evaluation elements are a dominant feature of artificial production projects.

The category reviews are designed to include six steps: planning; project sponsors' reports and proposals, ISRP review; public review; staff review and recommendations, and final Council decision. The planning phase for the RME/AP category actually began in January 2009, identifying 99 projects for review. Most of these were existing projects, but the list also included a small set of new projects intended to address gaps in the research, monitoring or evaluation elements of the Fish and Wildlife Program and FCRPS Biological Opinion. These gaps and associated projects were identified in a collaboration process in 2009 with regional fish management agencies (known as the "Skamania workshop"). The "Skamania workshop" sparked the development of the multi-agency Anadromous Salmonid Monitoring Strategy (ASMS), a set of useful principles and guidelines that is itself a work in progress recently reviewed by the ISRP. A broader set of framework principles also useful for review planning are found in the Council's draft Monitoring, Evaluation, Research and Reporting Plan (also known as the MERR Plan). The MERR Plan is an overarching and extensive research, monitoring and evaluation framework the Council has been working on as another facet of the commitment in the 2009 Fish and Wildlife Program. Neither the MERR Plan, nor the Anadromous Salmonid Monitoring Strategy (which may be thought of as an implementing strategy under the MERR Plan), have been formally adopted in a form that allows them to be used directly in this review as a source of decisionmaking criteria. But the principles and considerations informing the development of the MERR Plan and the monitoring strategy for long-term guidance are also being brought to bear in this review, in a consistent manner.

Part of the planning including a decision to focus the RME/AP category review on activities related to anadromous fish and to resident fish in the portion of the basin below the "blocked areas." Projects or parts of projects related to research, monitoring and evaluation or to artificial production that are not included in this review are as follows:

- Wildlife project monitoring and evaluation (reviewed during the wildlife category review)
- The monitoring work elements in habitat projects, monitoring project implementation (did the habitat action take place?) or project effectiveness (did the habitat actions result in the desired change in local habitat characteristics?) (to be reviewed as part of the geographic review of habitat projects)
- Research, monitoring and evaluation and production projects that relate to resident fish in the blocked areas, such as above Chief Joseph/Grand Coulee dams (later category review)
- Data management and regional coordination projects, even if linked to monitoring and evaluation activities (later category review)
- Artificial production projects implemented under separate, pre-existing legal authorities, even if funding is partly reimbursed or directly funded by Bonneville, including Lower Snake River Compensation Program hatcheries and the Leavenworth Hatchery

For the projects within the review category, project sponsors were then asked in June 2010 to submit the necessary information for review by the end of August 2010. The sponsors were asked to include project descriptions, work elements, a report on results, proposed work for the next five

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fiscal years, and proposed budgets. The project sponsors entered the information directly into the new Taurus database (cbfish.org) in a set proposal format. The review process also included 59 monitoring and evaluation and artificial production projects so recently reviewed by the ISRP and Council that it did not make sense to ask for project submissions or actually review the specific projects, but which needed to be part of the overall review to provide the necessary context for the full category. The page on the Council's website for the RME/AP Review, describing the steps in the review process and including the link to the list of projects reviewed and those part of the review context, is at <http://www.nwcouncil.org/fw/budget/2010/rmeap/Default.asp>.

The ISRP began its review in August 2010. As noted above, under Section 4(h)(10)(D) of the Northwest Power Act, the Council is to conduct its review of projects with the assistance of an Independent Scientific Review Panel appointed by the Council. The ISRP is asked "to adequately ensure that the list of prioritized projects recommended is consistent with the Council's program," and is to make project recommendations to the Council "based on a determination that projects: are based on sound scientific principles; benefit fish and wildlife; and have a clearly defined objective and outcome with provisions for monitoring and evaluation of results." Along with the requirements of the Act, and the information from the project sponsors, the Council also posed a set of questions based in the Council's Fish and Wildlife Program for the ISRP to consider during the review.

The ISRP issued a preliminary report on the projects in the RME/AP category in October 2010. <http://www.nwcouncil.org/library/report.asp?docid=8>. The statute requires the Council to release the panel's findings for public review and comment. The Council is to "fully consider" the recommendations of the panel. The ISRP concluded in its preliminary review report that 47 of the project proposals meet the ISRP's science review criteria either in whole or in part or with certain qualifications. The ISRP noted that for most of the rest of the projects, the ISRP needed further information before it could conclude its review, and asked for a response by the sponsor to a preliminary set of review comments. The ISRP also concluded that a few of the projects did not meet science review criteria or were not amenable to review, and also sought further clarification. Project sponsors submitted responses to the Council and the ISRP in mid-November 2010.

The ISRP then issued its final review report on December 17, 2010. <http://www.nwcouncil.org/library/report.asp?docid=27>. To quote from the ISRP's summary of its final report:

This report provides the final comments and recommendations of the Independent Scientific Review Panel and Peer Review Groups for 99 proposals submitted for the 2010 Research, Monitoring and Evaluation (RM&E) and Artificial Production Categorical Review for the Columbia River Basin Fish and Wildlife Program. Part 1 provides programmatic comments and recommendations that apply broadly to general issues that were identified in multiple proposals during the ISRP reviews. Part 2 includes specific ISRP recommendations and comments on each proposal.

The ISRP found that of the 99 proposals submitted 38 proposals (38%) met scientific review criteria and 50 proposals (50%) met criteria with some qualifications. In addition, the ISRP found that 5 proposals (5%) did not meet criteria and felt that 5 proposals (5%) were not applicable for review at this time. One proposal had yet to address the ISRP's request for a

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response. Overall, the projects are demonstrating improved data collection, analysis, and reporting. And the ISRP compliments the Basin's scientists, managers, and technicians for implementing a robust monitoring effort in a large geographic region with a complex legal and administrative structure. The program's RM&E and artificial production projects are providing data that will be useful toward supporting adaptive management of the Fish and Wildlife Program.

In July 2010, a Council letter to the ISRP emphasized that in implementing the 2009 revised Columbia River Basin Fish and Wildlife Program (Program), the Council anticipated maximizing funding of on-the-ground mitigation efforts while conducting an efficient monitoring and research program to meet the priority needs of the region. The ISRP was asked to review RM&E and artificial production project proposals mindful of the Council goal to reduce duplicative and excessive research, monitoring, and evaluation, and of the Council's intent to recommend adjustments to projects as needed and apply savings to on-the-ground work. The ISRP was asked to consider how and to what extent each project supported and was consistent with the following key policies, framed as questions:

Is the project scale and resource commitment appropriate for the project's objectives?

For research projects, is a critical uncertainty being addressed? What is the hypothesis being tested, and is it prioritized in the Research Plan?

Is the monitoring or research conducted by a project proportional to the biological risk or project success risk?

Does the project contribute valuable data to inform one of the nine program-management questions from the working list proposed by the Council and the associated High Level Indicators?

What are the major accomplishments of these projects, and are the data derived from the projects useful and relevant?

Is the project part of a comprehensive monitoring program?

Does the project fill a priority Program data gap, or is the project required by a biological opinion or a recovery plan for species listed under the Endangered Species Act?

Does the project's RM&E data have a reasonable certainty or a reasonable confidence level?

Is the project consistent with the general principles of the Hatchery Scientific Review Group (HSRG)?

Are data produced by the project fully described, including metadata and methodologies used, easily available for public review, and capable of being used to aggregate data to an appropriate higher scale, such as a broader geographic scale or population scale?

How should the Council consider the impact of ocean conditions on fish and wildlife populations in making its final recommendations to Bonneville?

To a large extent, the questions posed by Council are embedded in the ISRP's standard scientific review criteria and have been incorporated in individual ISRP proposal evaluations.

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Those projects with “in part” and “qualified” ISRP assessments may have components that did not entirely meet the objectives of the guidance questions from Council. Important points of inconsistency are identified in individual proposal reviews.

The ISRP finds few projects where RM&E efforts were clearly duplicative or excessive. The ISRP does feel there is a need for better coordination and integration among projects, and for a strengthened emphasis on evaluation of field data, but the ISRP continues to find that the Fish and Wildlife Program would benefit from more, not less, high quality research, monitoring, and evaluation. The lessons learned from thoughtfully designed RM&E will contribute to the Program’s cost effectiveness and will improve the efficacy of future restoration actions.

As required by the Act, the Council then invited public to comment on the ISRP’s report and the projects under review. The comment period ended February 1, 2011.

<http://www.nwcouncil.org/fw/budget/2010/rmeap/Default.asp>

The Council staff, working in cooperation and consultation with Bonneville staff and other agency personnel, are reviewing the project information and comments, the ISRP’s report, public comment, and other information. In the winter and spring of 2011 the staff will be framing programmatic and project-specific issues that need resolution, as well as alternatives and staff recommendations.

The Council will be considering all of this information and making final decisions on project-funding recommendations to Bonneville later in spring 2011. Under Section 4(h)(10)(D) of the Act, the Council completes the review process by deciding on its project-funding recommendations to Bonneville to implement its Fish and Wildlife Program. The Act specifies that in making these recommendations, the Council is to “fully consider” the recommendations of the ISRP. If the Council decides not to accept a recommendation of the ISRP, the Council must explain in writing its reasons. The Council is also to “consider the impact of ocean conditions on fish and wildlife populations” and “determine whether the projects employ cost-effective measures to achieve program objectives” when deciding on its project-funding recommendations. “The Council, after consideration of the recommendations of the Panel and other appropriate entities, shall be responsible for making the final recommendations of projects to be funded through BPA’s annual fish and wildlife budget.”

Part 2: Programmatic Issues

Part 2 identifies a set of broader policy and programmatic issues that have arisen out of the review of the projects in the two categories. The ISRP provided a set of programmatic comments, which have been one important source for the identification of these issues. The issues are summarized briefly here, with additional explanation developed in attachments when. Possible resolutions for the issues are also suggested or recommended by staff at this stage of the process. The final version of this part of the document will contain the Council's decisions on these programmatic issues, which in certain cases will then be conditions or recommendations that accompany the relevant project recommendations.

1. Budget priorities between monitoring and evaluation and on-the-ground activities

Certain members have expressed an interest in setting an overall budget target for the research, monitoring and evaluation portion of the Fish and Wildlife Program. Others have opposed the idea. Others have mentioned a desire to define more sharply the priorities within the category and allocating funds to these priorities. These are issues that need further definition by the Council if a programmatic budget issue overarching the entire category is to emerge.

The Committee and Council also have a number of smaller issues to decide with regard to how the available budget will be allocated to the projects. These will be addressed in Part 3.

2. Habitat effectiveness monitoring and evaluation

The Council's Fish and Wildlife Program is "a habitat-based Program," aiming "to rebuild healthy, naturally producing fish and wildlife populations by protecting, mitigating, and restoring habitats and the biological systems within them." The Fish and Wildlife Program thus depends heavily on actions in the mainstem, tributaries and estuary intended to protect or improve habitat characteristics as the way in which the program will ultimately protect, mitigate and enhance fish and wildlife populations adversely affected by the hydrosystem. The FCRPS Biological Opinion is built on the same conceptual foundation. The analysis supporting the conclusions in the Biological Opinion includes quantitative estimates of the improvements in life-stage survival to be gained from habitat actions in all areas.

For this reason, monitoring and evaluating the effectiveness of our habitat actions, and using what we learn to adapt the implementation and management of the program, is *the* critical programmatic issue in the RM&E review. Yet all of the elements of the habitat effectiveness monitoring and evaluation effort are in flux or under development. This includes the precise contours of the status and trend monitoring of habitat characteristics and the relationship of this monitoring to the population status and trend monitoring, the distinct but related role of the cause-and-effect "intensively monitored watershed" research effort, and especially the analytical methods and procedures that will be used to evaluate all of this information and report on what is being learned.

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In other words, the Council still needs clarity and further definition on the monitoring and especially the evaluation and reporting elements of the habitat effectiveness m&e. The Council will not conclude this review without being comfortable that there is place the monitoring and evaluation protocols and methods that give us a reasonable chance of knowing -- in five, ten, twenty years -- whether the region's huge investment in an evolving suite of habitat actions is contributing significantly to the recovery and rebuilding of fish species important to the region.

The ISRP mirrored these overarching concerns in the Panel's programmatic comments. This led to a one-day workshop hosted by the Council on February 10, 2011, with the ISRP and federal and state agency and tribal representatives involved in the habitat effectiveness m&e work. As of early March, we are waiting the ISRP's report from the workshop before defining these issues further and recommending solutions. In the meantime, the staff is working with the members and others to sketch in a clear way the overall architecture or framework of the habitat effectiveness monitoring and evaluation effort, and the expectations and assumptions and relationships inherent in the framework. Ultimately this may become an attachment to the RME/AP decision document with the Council's recommendations embedded in the architecture.

NOTE: The habitat effectiveness monitoring and evaluation projects included in this review are focused on watershed- and population-scale efforts to monitor how habitat characteristics are changing and to relate those changes in some way to changes in life-stage and life-cycle population characteristics. One other element of the overall effort to monitor and evaluate the effectiveness of habitat actions is what can be called project-scale or local-scale "project effectiveness." That is, did a habitat action result in the desired change in the local habitat characteristic(s) targeted? Most of this monitoring currently takes place as part of the work elements of individual habitat projects. These projects and work elements are not part of this review, but will be reviewed during the follow-on geographic review of habitat projects. There are also discussions taking place about developing an umbrella approach to this particular type of monitoring, with an independent third party overseeing the monitoring and evaluation of project-scale effectiveness in a coordinated, consistent manner. That umbrella proposal is not ready for review or recommendation in this RME/AP review, but we do plan, as part of this issue in this review, to describe the role of this type of monitoring in the overall habitat effectiveness framework, and our expectations for how this monitoring might take place in the future.

3. Monitoring and evaluating the effectiveness of habitat actions in the estuary

The estuary presents a particular version of the habitat effectiveness issue identified just above. The 2009 Fish and Wildlife Program and the 2008 FCRPS Biological Opinion significantly increased attention on the potential for salmon and steelhead survival gains in the lower Columbia river and the estuary. Project implementation and funding levels have correspondingly increased, both for habitat actions and for assessment and monitoring and evaluation elements. But along with the growing attention to the needs in the estuary there appears to be a lack of coordination and communication among different activities, especially a lack of a sufficiently developed framework for linking actions and effectiveness monitoring and evaluation.

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The RME review includes one project devoted to estuary research, monitoring and evaluation. Meanwhile, the Corps of Engineers is funding and implementing research, monitoring and evaluation activities in the estuary and lower Columbia River as well, and Bonneville staff report that in discussions among the Action Agencies, the Corps of Engineers has been assigned the ultimate responsibility for evaluating action effectiveness in the estuary. In addition, in 2009, Bonneville implemented RPA 37 of the FCRPS BiOp by forming an Expert Regional Technical Group (ERTG) for the estuary. The purpose of the ERTG is to provide technical support to the Action Agencies on *estimated survival benefits* from habitat actions in the estuary, to help inform the selection of habitat restoration activities in the estuary and lower Columbia River. A related initiative is the Integrated Status and Trends Monitoring (ISTM) program. This is a demonstration effort under PNAMP, focusing on developing monitoring processes and tools in the estuary. There are multiple entities involved in this effort including ODFW, WDFW and the US Geological Survey (USGS).

The various activities and participants may each make sense in concept. But better coordination of the work *and* an overarching synthesis of the action effectiveness monitoring and evaluation to the habitat actions are needed if the activities in the estuary are going to be conducted in a scientifically sound, efficient and collaborative manner. One illustration of the problem: Program implementation includes two habitat projects to address the Biological Opinion habitat needs (*CREST Estuary Habitat Restoration* (2010-004-00) and *Columbia Land Trust Estuarine Restoration* (2010-073-00)). Both received unfavorable reviews in 2010 from the ISRP. The Panel recognized the importance of these projects for the BiOp's habitat restoration effort in the estuary. Yet it was completely unclear to the ISRP how these two projects actually fit into a overarching approach to the estuary linking habitat restoration actions to limiting factors and management decisions to monitoring and evaluation activities.

What happened to those two projects is thus symptomatic of the larger issue -- the lack of a clear synthesis or framework in the estuary linking habitat restoration actions to monitoring efforts to action effectiveness evaluations. Part of the issue may lie in the division of responsibility. As noted above, Bonneville informed the Council that the Corps and Bonneville have divided the estuary responsibilities such that Bonneville has assumed responsibility for a significant portion of the habitat restoration actions and status and trend monitoring, while the Corps of Engineers assumed responsibility for action effectiveness monitoring and evaluation. This may work, but only if there is an overarching synthesis of the habitat effectiveness monitoring and evaluation effort in the estuary to connect the elements. This synthesis does not yet exist, and staff has been investigating how the Council's RME/AP review can be useful in prodding the responsible entities into developing it, for ISAB or ISRP review.

As of early March staff is working to set up a meeting with Bonneville and Corps staff to explore this further, which will likely take place in late March. But staff is leaning toward recommending that the Council push hard for the entities to complete an estuary-wide synthesis prior to the initiation of the review of habitat actions, a synthesis that will summarize the research and monitoring that has occurred or is occurring in the estuary, and how that information will be evaluated (and by what methods and on what reporting schedule), and then used to inform management decisions and priorities for restoration. This is necessary if the on-the ground work in

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the estuary (such as the CREST and CLT projects) is ever to achieve satisfactory scientific reviews and continue with minimal disruption.

Among other elements, this synthesis report should also explain more clearly the role of the one estuary monitoring project reviewed as part of this RME/AP review, the Lower Columbia River Estuary Partnership's Ecosystem Monitoring project. The ISRP and staff review of that specific project further highlighted the need for a synthesis of the information collected under the project and how it will be used to evaluate actions. *See* the recommendations and comments for that project for additional information.

4. Monitoring and evaluating the effectiveness and effects of artificial production actions

The artificial production portion of the category review includes (a) projects that involve the planning, development, operation and maintenance of artificial production activities funded under the Council's Fish and Wildlife Program; (b) separate projects that direct the monitoring and evaluation of these production initiatives; and (c) a set of research, monitoring, evaluation and coordination projects aimed more generally at investigating the effectiveness and effects of artificial production. The Independent Scientific Review Panel favorably reviewed the projects in the category, finding them largely well designed with the ability to report data important to the implementation of regional artificial production goals and objectives. This is due in large part to the number of times many of these projects have been reviewed and improved in the past, upon which significant production commitments have been made under the Fish and Wildlife Program, Columbia Fish Accords, and the U.S. v. Oregon agreements and analyses.

Even so, the review by the ISRP and by the Council staff, and the continued stream of information about production that comes the Council's way, continues to highlight critical issues and uncertainties with production. The key question that continues to be asked of the production efforts in the basin, both funded under the Program and otherwise, is whether the production of hatchery-origin fish is or might be having unacceptably adverse effects on the fitness of natural-origin fish, adverse effects that might overwhelm whatever are the benefits of the artificial production. There is still uncertainty and contention around this question, as well as a body of hatchery reform recommendations, such as the HSRG report and the work of the Ad Hoc Supplementation Workgroup) intended to reduce that risk and uncertainty that might be applied more aggressively in certain cases. It is thus not clear whether the production effort under the Fish and Wildlife Program, individually and collectively, is designed and coordinated sufficiently to be able to evaluate this relationship to the extent we need to and, especially, to then be able to implement hatchery reform measures to improve and protect natural-origin fish when a potential problem is identified.

The lack of a regionally coordinated umbrella for the ongoing collection of monitoring information and the evaluation and reporting of conclusions on effects and effectiveness thus remains a concern. The multi-agency Anadromous Salmonid Monitoring Strategy (ASMS) helps, but it is not itself the vehicle for the coordinated evaluation of production effectiveness and effects. However, the RME/AP Review does contain one newly defined Bonneville/NOAA project aimed precisely at this need, consistent with the ASMS -- the Columbia River Hatchery Effects Evaluation

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Team (CRHEET). Unfortunately, the CRHEET project is still under development, and not is known yet of the details to be able to assess whether and how it will serve the need. The federal agencies sponsoring the project are likely to defer beginning the CRHEET project until the next fiscal year, giving the Council and others time to participate in the effort to work out the project details in the right way.

In short, the basic concepts underlying this group of projects are sound, and the large majority are technically sound as well. Over the next months the Council will need to work with the other program participants to shape the CRHEET projects and other elements into a regional artificial production effectiveness/effects framework that meets the goals and criteria expressed in the Council's Program, a framework the Council can also rely upon in the subsequent review of the Lower Snake River Compensation Program hatcheries.

Thus, the staff recommendation at this point (early March) is as follows:

(1) As part of the decision on the "A list" of projects in April (*see* Part 3) the Council will resolve this programmatic issue by describing its expectations for the development in the next year of a coordinated umbrella approach for monitoring, evaluating and improving hatchery effects and effectiveness, whether that is through CRHEET or some other vehicle.

(2) Most of the projects relating to artificial production will be moved into the "A list" for consideration and final Council recommendation at the same time in April (The CRHEET project itself remains on the "B list," and a few of the other projects have project-specific issues still to resolve.) But all of the AP projects on the "A list" that involve research, monitoring and evaluation should receive at most a two-year funding commitment pending the development of the umbrella approach above, a commitments to be revisited and possibly reshaped after that.

5. Research projects relating to the ocean

The RME review included three research projects totaling \$5million per year studying the survival of salmon and steelhead in the ocean. Each project has its particular merits and issues, addressed by recommendations and comments associated with the project. But the ISRP report and staff review have raised broader issues about the ocean research, including the lack of any overarching plan for the ocean research and a lack of coordination among the projects, and a lack of coordination with the projects in estuary also attempting to estimate juvenile salmon mortality. It is also not clear how the projects collectively are addressing the Ocean strategies in the 2009 Fish and Wildlife Program and thus how the information to be gained will help us distinguish the effects of ocean conditions from other effects and help us manage in freshwater for variable ocean conditions.

After noting the lack of coordination and synthesis, the ISRP (in its programmatic comments) suggested the possibility of a Bonneville/NOAA sponsored forum on the effects of ocean and climate conditions on Columbia fish and wildlife. Substantive topics needing more consideration included an inquiry into life history and density dependence matters, the possible development of simulations and predictive models to vary harvest or hatchery releases, and in general a better coordinated effort to understand how ocean conditions affect growth, survival and ocean distribution of anadromous fish.

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These considerations and the project-specific reviews will inform the staff and then Council recommendation as to which of the ocean research projects to recommend for continuation. It is likely the staff recommendation will be not to continue at least one of the three projects, a project-specific issue still under consideration. For those research projects that do go forward, staff is considering a programmatic recommendation that the project sponsors involved jointly complete a comprehensive synthesis report on the ocean research, responsive to the program's strategies, the ISRP's comments, and the points made in this programmatic issue. The synthesis report should detail what has been learned, what is being investigated, what conclusions can be drawn now, and the expected time frame for the research to yield further conclusions. The synthesis report should include consideration of potential salmon management implications, and if possible recommendations for management based on the information collected and evaluated. The report should also describe how the disparate research projects will be coordinated from here on, and how data collection will be standardized and data made widely accessible.

Under this scenario, the Council would recommend funding for these ocean research projects for one year through FY2012 to complete the synthesis report. If the scope of work and the budgets for the projects need to be reworked to accommodate the production of the synthesis report, Bonneville should see to that. The Council would then ask the ISAB to review the synthesis report. The Council and Bonneville will decide on additional funding for these projects in the out years depending on the production and review of the synthesis report, and then on how the project sponsors propose to re-shape the research projects consistent with the recommendation here and the outcome of the synthesis report review.

6. Research projects in general

The RME review includes a number of research projects (approximately 30) across the spectrum of the Fish and Wildlife Program. Some are pure research, some are projects that mix research elements with other aspects of monitoring, evaluation, assessment, or on-the-ground actions. The ISRP and then the Council has worked in this review to assess whether individual research projects have an appropriate study design that clearly state the hypotheses or premises being investigated, the reason the research should be considered a priority by addressing critical uncertainties important to management decisions under the program, the methods and timelines for the research, and a definite terminus date for the research. Ongoing research must be reporting results and progress. The comments and conditions associated with individual research projects will highlight these factors, include whether these elements are missing and need further definition.

Staff is also recommending that all research projects receive no more than three-year funding recommendation. Out-year funding will be dependent on ISRP and Council review of the reports of research results and a proposal for further work.

How to evaluate from a programmatic perspective what research is a priority under the Program is becoming an issue. The Council approved a Research Plan in 2006. The RME/AP review indicates that the plan may be out-of-date in certain particulars, and the plan's statements about research priorities may be too broad in certain cases to provide much guidance in shaping priorities.

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Other plans and programs are also a source of research priorities, especially the FCRPS Biological Opinion and the Corps of Engineers' research efforts, and the disparate efforts are not sufficiently coordinated. At this stage in the review process (early March), we have a preliminary indication that the Council intends to pursue in the next year or two a thorough review and revision of the Research Plan, yielding a much more rigorous set of priorities for research to guide future project reviews. The Council will consult with Bonneville, NOAA, the Corps, the other federal agencies, and the relevant state agencies and tribes in this review.

7. White sturgeon

White sturgeon in the lower Columbia River are found in freshwater and marine environments. Due to passage barriers, the marine environment is no longer available to most of the populations in the basin. Recruitment among the impounded populations is limited due to a lack of suitable spawning and rearing habitat or to flow conditions suitable to produce significant recruitment in the available habitat. Other factors significantly affecting sturgeon populations in the lower river include harvest and increasing sea lion predation.

The RME/AP review included four white sturgeon projects in the lower river (that is, below Chief Joseph Dam on the Mainstem Columbia, and below Lower Granite on the Snake River). These projects collectively include research, monitoring, evaluation and supplementation elements. Current project funding and implementation is focused on stock assessments, population monitoring, fisheries management, and monitoring the biological responses to mitigation actions. Besides assessment and monitoring activities, habitat and production activities have recently begun under projects in an attempt to rebuild productive, viable sturgeon populations and fishery opportunities in the Federal Columbia River Power System portions of the mid-Columbia and lower Snake River reservoirs.

The ISRP's review of the specific projects was favorable, albeit with comments about certain elements and activities. These project-specific matters are addressed in the projects comments (*see* Part 3). Yet the ISRP, looking at the collective effort in light of the current condition of sturgeon and of sturgeon knowledge, had several significant programmatic concerns, which the ISRP summarized as:

1. An effective basinwide management plan for white sturgeon is lacking and is the most important need for planning future research and restoration.
2. Specific factors affecting recruitment of white sturgeon are poorly understood.
3. The importance of the estuary and ocean in sturgeon production below Bonneville Dam is poorly understood.
4. The productivity of pools above Bonneville Dam for sturgeon is poorly understood.
5. Consideration of adaptive management approaches should include a review of harvest regulations with the intent of facilitating the efficient, low cost acquisition of creel data needed for stock assessment.

Staff concurs with these comments. We would add concerns about the progress on efforts to address mainstem dam passage issues. The Mainstem Plan in the 2009 Fish and Wildlife Program

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calls specifically for studies that evaluate effects and mortality with respect to dam passage. It also calls for an evaluation of the importance of connectivity among populations; assessment of population isolations and evaluation of the feasibility of mitigation, and that this work should occur prior to investing in additional supplementation efforts.

Staff has been working with the staff of Bonneville and the project sponsors to craft an appropriate programmatic response to these concerns. Perhaps the most likely resolution is to call for the production of a basinwide research synthesis and management plan within the next year responsive to the concerns of the ISRP and the Fish and Wildlife Program.

Thus as of early March, the staff recommendation is shaping up to call for the development of a basinwide comprehensive management plan for white sturgeon. All four currently funded projects can contribute to the development of such a plan, but two of the four are specifically tasked with leading or assisting with a comprehensive management plan:

(1) The Columbia River Inter-Tribal Fish Commission project (2007-155-00) would have included in its contract as Objective 1 to:

Complete, in conjunction with regional, tribal, state, and federal management entities, a collaborative and comprehensive strategic plan for sturgeon conservation, restoration and management to include specific objectives, strategies, actions, milestones and schedules for habitat protection and restoration, natural production, hatchery production, fishery management, research, monitoring, and evaluation.

(2) The Yakama Nation project (209945500) would have included in its contract as Objective #1 to:

Assist in the development of a recovery, research and monitoring strategy, and hatchery Master Plan for depleted sturgeon populations in FCRPS portions of the mid-Columbia (below Priest Rapids Hydroelectric Project) and lower Snake rivers.

The project sponsors appear to be in agreement to collaborate on this effort and to work with the Council on the plan. This effort is outside of the current scope and intent of Project #1986-00-00. However, the project sponsors see the importance of this strategic plan and will assist in its development for the Council. In early discussions with the sponsors, the basinwide comprehensive plan should include but would not be limited to:

What we know

- Population abundance and distribution (including trends)
- Life history
- Limiting factors
- Other factors affecting populations and recruitment (harvest, predation, toxics, ingestion of fishing gear)
- Mitigation, management and restoration actions – immediate needs/changes
- Current management strategies

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What we don't know

- All of the above
- Research needs
- Long-term research needs/questions

Planning and feasibility for supplementation (feeding into a production master plan)

- Purpose (objectives)
- Locations
- Impacts for and for other fish

Literature Search – life history, restoration and recovery, and supplementation

- Inside basin
- Outside basin

8. Lamprey

The RME/AP review included a set of six projects targeted at lamprey that total nearly \$2 million per year. The Corps of Engineers is also funding and implementing five lamprey dam passage-related projects at up to \$5 million annually as a commitment uncertain the Columbia Fish Accords (not reviewed here). The goals and objectives associated with this group of projects focus on determining the status of lamprey populations in different locations and on identifying and addressing the factors that are limiting lamprey survival and productivity.

The ISRP recognized the progress being made through these projects at learning more about the little-known Pacific lamprey, a key anadromous species from a tribal cultural point of view and also possibly an important species for bringing marine-derived nutrients to tributary ecosystems. However, the ISRP is also concerned about the lack of an overall synthesis of results from all the lamprey restoration projects in the basin. Given that some of assessment work began more than a decade ago, the ISRP believe that a summary of results should be available and is required to guide future lamprey restoration efforts. On the other hand the sponsors of these projects are largely focused on particular subbasins, and a Columbia or Pacific coast-wide synthesis is not within the scope of their work.

Thus, the key programmatic issue regarding lamprey is whether these efforts are or can be sufficiently coordinated in a way to allow for the information generated by the individual projects to be gathered, analyzed and synthesized in a more comprehensive basinwide approach. The goal would be to have comprehensive implementation and monitoring program that reports and analyzes results, addresses the critical data gaps for lamprey, and makes sure that information and results and analyses are being shared among sponsors to support coordinated adaptive management of the lamprey restoration effort.

The ISRP suggests that the inter-agency Columbia River Basin Lamprey Technical Working Group is the likely gathering of experts to produce a basinwide synthesis. The synthesis should summarize results and develop conclusions on the data gathered so far on the status and trends of lamprey populations, limiting factors, and the critical uncertainties, and prioritize actions based on

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these conclusions. Critical questions to analyze include the value of tributary habitat projects in helping to improve lamprey returns, whether mainstem dam passage is the key limiting factor, and the relative role of other factors such as ocean conditions and toxic contaminants. The ISRP suggested that the Independent Scientific Advisory Board (ISAB) should then review the synthesis.

Staff is exploring whether one of the projects in this review would be to the appropriate vehicle for this synthesis. This is the project sponsored by the Columbia River Inter-Tribal Fish Commission (#2008-524-00) to develop and implement a tribal Pacific lamprey restoration plan for the Columbia River Basin. The project could be adapted to support the development of the synthesis report described above, drawing not only from the tribal lamprey projects but also the Corps' work under the Accords. If the scope of work or the budget for the project is not sufficient for this purpose, Bonneville could adapt those to make it so.

The staff is confident (as of early March) that we can work out a reasonable resolution to this programmatic issue in the March/early April time-frame. For that reason, we also tentatively recommend including the projects related to this issue in the "A list" for consideration by the Committee and Council for resolution in April. *See* Part 3.

9. Coded-wire tags

The Council's has had concerns over Bonneville funding of coded-wire tags for more than a decade. In 1997 the Council expressed concerns about a proposal for Bonneville to spend nearly \$3 million per year on coded-wire tags, concluding that *"Tagging throughout the basin and coastwide has primarily benefited the states' harvest regulation activities. This is not an area of Power Act/Council concern or authority... .. The issue is whether the level of Bonneville funding for coded wire tagging is out of proportion with what could be considered Bonneville's "fair share" of the coded wire tagging program, whether that share is based on the proportional number of fish from direct program-funded hatcheries that must be tagged or on the amount of information gleaned from the tags that is relevant to the Council's program."*

At that time the Council called on Bonneville to consult with the coded-wire tag participants and other agencies to realign program funding. This happened to some extent, and Bonneville investments in coded-wire tags dropped to some extent (e.g., even below \$2 million in 2008 actuals). But the issue has never been evaluated and resolved to the Council's satisfaction. And the project proposals for coded-wire tag funding by Bonneville now seem nearly as extensive as ever, with a FY2012 proposal for nearly \$3 million, climbing to \$3.5 million later in the decade.

At the same time, the ISRP and others have raised issues about the continued use of coded-wire tags, most recently in an exhaustive report out of the Pacific Salmon Commission: (*Pacific Salmon Commission Coded Wire Tag Workgroup. 2008. An action plan in response to Coded Wire Tag (CWT) Expert Panel Recommendations. Pacific Salmon Comm. Tech. Rep. No. 25: 170 p.*) These concerns include a lack of coordination, concerns about whether tag recovery efforts are sufficient to generate meaningful evaluation or study results, questions about whether coded-wire tag information is being effectively used to assess modern management issues, concerns over whether certain factors (e.g., mini-jacks) bias results using coded-wire tags, and questions about whether

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coded-wire tagging should give way to newer tagging technologies. The ISRP concluded that there is a definite need for the development of a comprehensive plan that guides tagging and recovery activities throughout the Basin, especially among coded-wire tag operations.

Staff is working on a recommendation that the Council recommend funding for the coded-wire tag projects for one year only, at the requested FY2012 level. The funding recommendation would be conditioned on the project sponsors, within that year, developing an overarching plan for ISRP review to coordinate the tagging of salmon throughout the Columbia River Basin, including the recovery of tags in the fisheries, on the spawning grounds and elsewhere. In that plan, the sponsors should address the ISRP's concerns and comments (including evaluating the magnitude of mini-jacks among yearling coded-wire tagged Chinook salmon releases, and recording mini-jack data in the RMIS database); address the recommendations of the Pacific Salmon Commission's Coded-Wire Tag Workgroup; evaluate the viability of replacing coded-wire tags with newer more efficient tagging techniques, including a transition plan to make these changes; and, with Bonneville, review the appropriate level of Fish and Wildlife Program participation and Bonneville funding of coded-wire tagging. Based on the plan and the ISRP review, the Council will then work with Bonneville and the tagging agencies to revise the coded-wire tag projects for future funding.

10. PIT tags and related tags

The ability to mark and tag fish is one of the most important and useful techniques available to fishery managers and researchers. Tagging of salmon, steelhead and other fish species using Passive Integrated Transponder (PIT) tags, as well as use of active tags such as acoustic and radio telemetry, is a key tool for monitoring and evaluating both juvenile and adult salmon passage from headwater rearing areas through the mainstem hydropower projects, into the ocean, and back to the spawning grounds. Both passive and active tags are used in a wide array of research, monitoring and evaluation (RM&E) projects throughout the Columbia Basin. Fish tagging projects utilizing both passive and active tags are funded under the Council's Fish and Wildlife Program, the 2008 FCRPS Biological Opinion, the Fish Accords, various Habitat Conservation Plans, the Corps-sponsored Anadromous Fish Evaluation Program (AFEP), and state salmon and steelhead recovery efforts. Collectively, these programs utilize either active or passive tags (or both) to monitor the status of fish populations, evaluate the effectiveness of various management actions, and resolve critical uncertainties in recovery strategies.

There are 12 projects in the review involving the tagging or use of such tags in monitoring, evaluation and research. Total three-year average funding proposed for all tagging projects in this programmatic topic area for FY2012-2014 is approximately \$15 million. All of these projects are important to implementation of the FCRPS Biological Opinion as well. And the projects themselves received largely favorable reviews.

Even so the ISRP and other reviews have raised a set of collective issues about the tagging projects. One is whether all these tagging efforts are sufficiently well coordinated so that we have a comprehensive monitoring and evaluation program addressing the critical data gaps or uncertainties, and so that tags, data and results are being shared among sponsors in such a way to adaptively manage future work. A related issue pertains to the status of the data collected to date

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and what it is telling us. A third concerns uncertainties about the extent of the effects of the PIT tag itself on fish, an issue under evaluation.

At the same time, the federal Action Agencies and NOAA Fisheries are working on a regional PIT Tag Plan. The intent of the plan is to foster better coordination and optimization of future tagging efforts, as well as efficient strategic placement of PIT detection systems throughout the Columbia River Basin. The PIT Tag Plan will be a major component of a broader Regional Tagging and Marking Plan that has been recommended by the ISRP/ISAB (2009), consistent with FCRPS Biological Opinion (RPA 52.6.) The scope of the PIT Tag Plan will also include non-ESA listed fish species. However, the current draft plan focuses on anadromous salmonid management issues. The purpose of the regional PIT Tag Plan under development is to evaluate, coordinate, and recommend the most efficient and effective tagging and detection systems needed to meet the monitoring and research needs of population status and trends, hydropower system passage and operations, habitat, hatchery, harvest management, and estuary and ocean conditions, to the extent feasible for anadromous salmonids in the Columbia River Basin. An important part of the plan will be to recommend required detector locations and capabilities, along with PIT-tagging efforts and analytical methods, with supporting rationale discussing how the precision of critical monitoring estimates may be improved, and how these improved estimates are expected to lead to better management decisions. Once a draft regional PIT Tag Plan is developed, it will be regionally reviewed and vetted, with input provided by the region's fishery agencies, tribes and other interested parties.

On this basis, and after a discussion with the Fish and Wildlife Committee in late February, the preferred recommendation here is for two years of continued funding of all of the PIT and other tagging projects. Pending a review of further developments, there should be a presumptive path to continued funding for these projects beyond two years unless substantive issues related to PIT or acoustic tagging are identified for any of these projects in the 2013 NMFS Biological Opinion check-in report, in the completed regional PIT Tag Plan, and/or the completed review of LSRCP hatcheries. If necessary, make any adjusted funding recommendations by the end of FY 2013.

11. Coordination issues

What are known as "regional coordination" projects will be reviewed as a category after the RME/AP review. But this review has highlighted a set of coordination issues under the Fish and Wildlife Program that could use focused attention. For one thing, the ISRP often noted a significant lack of necessary coordination among projects aimed at the same end, often compounded by a lack of a strategic plan tying together the work. This includes projects involving ocean research, the projects aimed at estuary habitat improvements and the monitoring and evaluation of effectiveness in the estuary, the projects making up the program's effort at assessing and improving conditions for lamprey, the various predation projects, and the monitoring and evaluation of conservation enforcement activities. Other areas within the monitoring and evaluation and artificial production activities exhibit extensive and necessary efforts at coordination (e.g., the habitat effectiveness work), involving personnel from federal, state, tribal and other entities. And yet little or none of this coordination takes place under the umbrella of or involves the coordination elements of the entities funded under the "regional coordination" projects. These factors illustrate in high relief the

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Fish and Wildlife Program's recognition that coordination efforts and funding should be focused through a set of functional activities that need coordination, and not necessarily on the basis of entities desiring coordination funding.

As noted in many of the programmatic issues above, the ISRP identified a range of topic areas that suffered from a lack of coordination in a number of ways, and the Panel often recommended a similar set of solutions intended to increase coordinated efficiencies and effectiveness. This includes developing coordinated synthesis reports, sharing data and information through scientific papers and science/policy forums, holding regular workshops focused on specific species, methods, or geographic areas, and on several topics, the drafting of basin-wide management plans. The staff concurs with many of the recommendations the ISRP made for increased coordination. As a result, Council will see staff recommendations that address these needs on (1) a project-specific basis; (2) through programmatic recommendations; (3) as a follow-up item to consider in the future (e.g. holding a technical forum on a particular topic in the next year or two).

In addition, during the upcoming category review of regional coordination, the staff may need to extract the coordination components from the research, monitoring and evaluation and artificial production projects (and other functional projects, such as habitat activities) to help bring about a consistent review of all coordination activities under the Fish and Wildlife Program. The Council will also need to take a careful look at the regional coordination projects, to see how well they line up with the coordination needs of the program. As the Council and Bonneville review the regional coordination projects, we may find it appropriate to contract with the recipients of regional coordination funding to take on specific tasks identified in this review to increase basin-wide understanding of our collective work and accomplishments for fish and wildlife.

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Part 3: Projects and Project-Funding and Implementation Recommendations

Part 3 of this document will contain and explain the Council's recommendations for the funding and implementation of the individual projects, along with a description of the available budget for these categories and the resolution of any budget issues.

Associated with this part at this stage (in early March 2011) are spreadsheets that list the projects reviewed in this category, with proposed budgets and other information for each project, including the ISRP conclusion. The tables also include comments about each project developed during this review. The comments are most often responsive to specific concerns about a project raised by the ISRP. The comments also reflect project management and reporting issues identified during the staff review. The tables and the comments also indicate whether a project is subject to a broader programmatic issue in need of resolution.

The tables will ultimately be the main vehicle for the Council's funding recommendation for each project, and will also include conditions or comments about funding or implementation to be considered part of the Council's funding recommendation for the project. Some of the projects will also be affected by the resolution of one or more programmatic issues; that will also be noted on the tables. And a few project-specific comments or conditions are too lengthy to fit into the appropriate box on the spread-sheet, and so these will be found below in this Part 3.

Form and duration of the multi-year project recommendations

One overarching issue with regard to the individual projects is the form and duration of the recommendations.

Staff will be proposing multi-year funding recommendations for the RME/AP projects that extend from FY2012 to possibly FY 2017. The duration of any particular project recommendation will vary from one to six years depending on the type of project, the project conditions, when the project is due to be completed, and if there is delivery of a product to review prior to a recommendation for additional years of funding.

The project recommendations brought forth by staff will be based on sound scientific principles, Fish and Wildlife Program review, and other considerations articulated during the process. Collectively, this work is intended to support and address the Council's Fish and Wildlife Program, as also integrated with the requirements of the FCRPS Biological Opinion and the commitments made by Bonneville with the parties to the Columbia Fish Accords.

The staff recommendations will not include individual project budgets or annual budgets. A multi-year funding recommendation that does not set a particular budget allows Bonneville and the sponsors flexibility in contracting and spending over the life of the project recommendation. Bonneville may also identify areas for cost savings within the work elements and the funding conditions identified by staff. In each case, Bonneville will have the flexibility to negotiate with sponsors through contracting to finalize work and budgets. Actual spending by Bonneville for each project should be sufficient to maintain project integrity as the ISRP reviewed it. With any multi-

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year funding recommendation, staff recommends the Council include the following general expectations:

1. The ISRP's science review of the projects is sufficient for the duration recommended for the project. Additional review generally will not be needed for the duration of the recommendation, with two exceptions: (1) when the project recommendation is conditioned upon the ISRP reviewing a deliverable (such as a comprehensive management plan) within or at the end of the funding period, or (2) when new components outside of the scope or intent of the project at the time of this review are proposed by the project sponsor or Bonneville during the funding period. In these cases, the delivered product or the new project components will be reviewed by the ISRP and a recommendation made by the Council prior to further funding.
2. Bonneville will provide start-of-year budgets for each project in this portfolio prior to beginning of the next fiscal year, which should also include: (1) trend information to show how and why the overall budget will change from the previous year, and (2) how inflation and cost-of-living adjustments are to be applied, if any.
3. Bonneville will work with the Council to track and follow-up on items or project conditions that require the sponsor to deliver products as part of the funding recommendations.
4. Bonneville will work with sponsor to address ISRP qualifications and other conditions during contracting when and as recommended by the Council.
5. Bonneville will provide adequate funding to maintain the integrity of the project as reviewed by the ISRP and recommended by the Council.

Development and Committee/Council consideration of "A list" of projects

The Council may be making these project-specific recommendations in two bunches. Following the ISRP review report and public comment period, a staff review in February and March 2011 assisted by Bonneville staff has identified xx of the 158 projects as ready for consideration for recommendation by the Council's Fish and Wildlife Committee in March and early April 2011, and then for a Council decision at the April Council meeting. These projects are identified in the spreadsheet tables in early March as the so-called "A list." These are projects not touched by or subject to an overarching programmatic issue that will still be in need of resolution, and that do not present project-specific concerns that still need resolution by the staff. The staff recommendations for the projects in the "A list" are all consistent with the ISRP's recommendations.

The staff recommendation for most of the "A list" projects is for the Council to recommend funding, albeit many with conditions and comments noted in the comment field on the spreadsheet. These comments and conditions are based in the ISRP review or in a staff review, coordinated with Bonneville staff, of the project and its history. A few of these projects come with a staff recommendation not to fund, most often because the work has been or will soon be completed and the project needs to wrap up.

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Note that the listing of a project on the “A list” does not denote that it is of greater priority or significance than the projects still under consideration -- only that it ready at this time for consideration by the Council. Some of the highest priority work within the RME category -- especially habitat effectiveness monitoring and evaluation -- is still awaiting resolution of key programmatic issues.

The rest of the projects in this review will be presented for Committee and Council decisions later in the spring or early summer of 2011, along with proposed resolutions of associated programmatic issues.

Guidance on specific projects

[placeholder in case we need to give guidance/comments/conditions on specific projects too lengthy for comment field on spreadsheets]

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Part 4: Council explanations addressing the formal requirements of Section 4h(10)(D) of the Northwest Power Act

Part 4 contains the formal explanations by the Council responsive to the specific requirements of Section 4(h)(10)(D) of the Northwest Power Act. This includes the written explanations required of the Council in those few instances in which the Council's project funding recommendations do not follow the recommendations of the Independent Scientific Review Panel. The Council also explains how it complied with the requirements in Section 4(h)(10)(D) to "consider the impact of ocean conditions on fish and wildlife populations" and "determine whether the projects employ cost-effective measures to achieve program objectives" when making project funding recommendations.

Explanations as to how the Council responded to the recommendations of the Independent Scientific Review Panel

Section 4(h)(10)(D) requires the Council to "fully consider the recommendations of the Panel when making its final recommendations of projects to be funded through BPA's annual fish and wildlife budget." If the Council "does not incorporate a recommendation of the Panel, the Council shall explain in writing its reasons for not accepting Panel recommendations." Finally, "[t]he Council, after consideration of the recommendations of the Panel and other appropriate entities, shall be responsible for making the final recommendations of projects to be funded through BPA's annual fish and wildlife budget." The Council has carefully and fully considered the project review reports of the ISRP, and with the few exceptions explained here, the Council has followed the panel's recommendations in formulating the Council's project funding recommendations.

Programmatic recommendations

xxx

Project recommendations

xxx

Consideration of ocean conditions

Section 4(h)(10)(D) provides that "in making its recommendations" to Bonneville, the Council is to "consider the impact of ocean conditions on fish and wildlife populations." Congress provided no other guidance as to the meaning of this consideration. The Council's initial policy response to this charge came in an issue paper titled *Consideration of ocean conditions in the Columbia River Basin Fish and Wildlife Program* (Council Document No. 97-6; <http://www.nwppc.org/library/1997/97-6.htm>). This paper continues to guide how the Council responds to the direction to consider ocean conditions in its project funding recommendations.

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Our regional understanding as to how ocean conditions affect Columbia River salmon populations in both the short- and the long-term both continues to increase and is still quite uncertain. Our increasing knowledge does include greater appreciation for the impact of the ocean on salmon abundance and the degree of variation in the marine environment. As species and as groups of populations (meta-populations), salmon are sufficiently productive under natural conditions to cope with the mortality, and the variations in mortality, they experience during that portion of the life cycle that takes place in the ocean. The key scientific principle guiding the Council's consideration is that salmon handle environmental variation throughout their life cycle and over time, including within the ocean portion of their lives, by having a broad array of biological characteristics within and between populations. This biological variation provides different options for salmon to survive environmental variability.

In addition, while the fish and wildlife program and projects cannot influence the ocean environment, actions can be taken to improve water quality and habitat in the estuary and near-shore environments. These transition zones are critical to the survival of young salmon.

Consequently, the Council's 2009 Fish and Wildlife Program describes the ocean environment an integral component of the Columbia River ecosystem. The primary strategy called for in the program is to "identify the effects of ocean conditions on anadromous fish survival and use this information to evaluate and adjust inland actions." The Fish and Wildlife Program then included set forth two strategies to guide the program's activities with regard to the freshwater plume, the near-shore ocean, and the high seas:

1. Manage for Variability

Management actions should strive to help anadromous fish and other species accommodate a variety of ocean conditions by providing a wide range of life history strategies. Continue monitoring and evaluation of the Columbia River plume and ocean conditions for impacts on salmonid survival. Monitor salmon returns and climate-change impacts on ocean conditions in order to identify factors affecting survival in the ocean and plume.

2. Distinguish Ocean Effects from Other Effects

Monitoring and evaluation actions should recognize and take into account the effect of varying ocean conditions and, to the extent feasible, separate the effects of ocean related mortality from that caused in the freshwater part of the life cycle.

The Fish and Wildlife Program's biological objectives for population and environmental characteristics and its strategies for the mainstem, estuary, habitat, and artificial production add further consideration of relevance. Taken together, the three primary ways the Council acting under the program can take into account ocean conditions in general and influence salmon survival in the ocean are to evaluate proposals and recommending funding for projects that: (1) further improve our understanding of the effects of ocean conditions on salmon populations; (2) improve productivity and preserve and extend life-history diversity in salmon populations; and (3) improve estuarine and near-shore conditions.

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[flesh out with context and decisions of RME/AP review; see relevant section of 07-09 review decision for further guidance]

Cost-effectiveness

Section 4(h)(10)(D) further provides that in making the project funding recommendations, the Council is to “determine whether the projects employ cost-effective measures to achieve program objectives.” As with the command to “consider ocean conditions,” Congress did not provide any further explanation or guidance as to the meaning of this provision. The legislation did not specify any particular approach to cost-effectiveness analysis or define in any particular what is meant by a “cost-effective measure.” The provision does not require, for example, the use of a single measure of biological effectiveness as a basis for comparison among projects, nor the use of strictly quantitative analysis. And while the logic of the Council’s program might focus most of the cost effectiveness analysis among and between project proposals, the literal wording calls for a cost-effectiveness analysis only *within* projects, that is, whether any particular project employs the best of possible alternative methods to meet its objectives.

Given this context, the Council has worked over the years to understand the state of the art in natural resource economics and cost-effectiveness analyses to help guide the Council in making the determination required. Soon after Congress adopted this amendment to the Power Act in 1997, the Council, with the help of its staff economists and its newly-formed Independent Economic Analysis Board (IEAB), developed an approach to the cost-effectiveness analysis in a document titled *Methods of Economic Analysis for Salmon Recovery Programs*, Council Document No. 97-12 (July 1997) (“methods analysis”). The Council first used this methods analysis to initiate the cost-effectiveness determination in the project review process for Fiscal Year 1998. It remains the basis today for the analysis and determination.

The methods analysis concluded that several problems make it difficult for the Council to undertake a quantitative cost-effectiveness comparison between Columbia River fish and wildlife projects using a single, quantified measure of benefits to determine which projects produce the greatest benefits per dollar. The problems include the lack of agreement on measures of biological effectiveness; the fact that the complex life-cycle of anadromous and resident fish makes it difficult to isolate the biological effects of particular activities or to compare different biological effects of different kinds of projects; and the fact that in the prioritization process, different project sponsors propose vastly different types of activities, and thus different kinds of cost and economic information, which makes cost comparisons difficult.

These observations remain valid. Based on the methods analysis and the IEAB’s concurring advice, and on the intervening years of experience, the Council continues to conclude that it is not able to undertake a classic, quantitative cost-effectiveness comparison of the projects, primarily due to the fact that we cannot directly quantify improvements (and especially direct projected improvements) to fish and wildlife populations in a single biological objective measure resulting from the physical effects of particular projects. There are sound reasons to believe projects produce benefits to fish and wildlife, as explained below, but not in a directly predictable single quantity. A

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quantitative cost-effectiveness comparison would require a far greater understanding of the direct biological effectiveness of individual actions than we have now.

The methods analysis noted, however, that there is much more to cost effectiveness than a quantitative comparison of the costs of alternative ways to achieve a single biological objective. Much can be done to review the efficiency of projects, to improve the likelihood that the projects selected will be the most cost effective, and to improve project management. Cost-effectiveness review drives toward procedures for project review, selection, and management that emphasize efficiency and accountability.

Based on these considerations, the methods analysis recommended four strategies to improve the likelihood that the projects recommended for funding are those that employ cost-effective measures to the greatest degree:

- Strategy 1: The best assessment of the effectiveness of fish and wildlife projects comes from the review by the Independent Scientific Review Panel (ISRP).
- Strategy 2: Improve the amount, quality, and comparability of project cost information.
- Strategy 3: Evaluate the record of existing projects over time. Projects that have been ongoing for some time should have yielded some measurable effects or have contributed some concrete addition to the region's knowledge about fish and wildlife problems.
- Strategy 4: Introduce selective audits on projects, oriented toward determining whether the contracting process contains the procedures necessary to manage the project's cost and effectiveness.

The Council's experience over the years has added to or elaborated on this set with three further strategies: (1) clarify, specify, and quantify program objectives as much as possible; (2) develop other elements of project review besides ISRP review that also provide accountability benefits; and (3) flag certain projects and programs for more in-depth review of benefits and costs.

[flesh out with context and decisions of RME/AP review; see relevant section of 07-09 review decision for further guidance]