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December 2, 2010

MEMORANDUM

TO: Council Members

FROM: Staff

SUBJECT: Considerations for the RM&E/Artificial Production Staff Review

At the November Council meeting, Council members asked for a review of what considerations will be used by staff to develop potential recommendations for the Council members. The planning and review process has been so long in the making that it's beneficial to check back in on the process for all concerned. The remainder of the document, with attachments, outlines requirements and considerations that will be made in developing recommendations to the full Council.

Background

The NW Power Act 4(h)(10)(D)(vi) directs the Council to fully consider the recommendations of the Independent Science Review Panel (ISRP) when making its final recommendations of projects to be funded through BPA's annual fish and wildlife budget, and if the Council does not incorporate a recommendation of the ISRP, the Council shall explain in writing its reasons for not accepting ISRP recommendations. In making its recommendations to BPA, the Council shall consider the impact of ocean conditions on fish and wildlife populations and shall determine whether the projects employ cost-effective measures to achieve program objectives. The Council, after consideration of the recommendations of the ISRP, the public 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 ISRP has participated in all project reviews.

Early categorical review planning documents describe the process and critical path for reviews. For staff review specifically, the April 2009 document entitled: *RM&E and Artificial Production Categorical Reviews*, describes the integrated process for review under Planning Phase and Critical Path. Step G of that document outlines the staff review which was applied to the Wildlife review and still holds for the RM&E/Artificial production review:

G. Staff Recommendation

Taking into account the ISRP final report on each project, the overall budget, and individual project recommendations, Council staff will develop a package of summary information about the entire set of RM&E and artificial production projects accompanied by funding recommendations for the Council to consider. This may include discussion of policy or programmatic issues, relationship to other program areas, linkages to the RM&E framework, category budgets, and options to fill gaps in the program.

R,M&E and AP Categorical Review

Categorical review, in general, is a review of ongoing projects in the program. The slate of RM&E /Artificial production projects includes harvest, predation, enforcement and a handful of other basinwide habitat-type projects. The slate also includes some *new* projects identified through the Skamania process as necessary to meet BiOp requirements. Because of the complex nature of this review -- issues and diversity of projects -- staff and Council developed more global questions and considerations to take into account for this review beyond the standard proposal questions used in the past. These new questions were developed for both the sponsors and the ISRP and are applied at several phases in the project review cycle. In general, they include coordination of work and work products; data collection, storage, analysis and availability; duplication of efforts, and consistency with other regional efforts like the 2008 FCRPS Biological Opinion, and the Hatchery Science Review Group. The table below lists documents that represent the more global considerations for this review process.

Attach	Document	Note
1	Targeted questions specific to subcategories	Reviewed by the ISRP and incorporated into the proposal form in narrative questions or as structured data fields
2.	June 1 Council letter to sponsors including 8 questions to address	Created by Council members, verified by staff that questions were embedded in proposal form
3.	July 15 Council letter to ISRP requesting 11 considerations during the review	How and to what extent each project supports and is consistent with key Program policies
4.	Additional questions and guidance prepared by BPA to address consistency with BiOp RPA associations (June 1, and October)	Developed by BPA and Action Agency workgroups to be applied in the review process

Staff Analysis and Recommendation

Staff review relies heavily on the ISRP Final Review to complete its funding recommendation to the Council that includes the questions from the guidance documents. The ISRP's final review will include project-specific recommendations and programmatic considerations (in general and in relation to individual projects). Staff anticipates a productive and useful analysis of similar project types within this category. Most projects in this slate will be scrutinized in the context of other projects which may lead to a more efficient and more cohesive program. While a project may be deemed "scientifically sound" by the ISRP, the Council (and region) should be looking at each project with an eye towards how it fits with the Program, the Council's draft MERR plan and how each tie with High Level Indicators. Staff review, as in the past, will also include

analysis and consideration of expenditures and funding, past review history, and project implementation issues (as noted by both Council and Bonneville staff).

Bonneville staff will be looking at each project with an eye toward meeting BiOp requirements also, among other things. Council staff and the Bonneville plan to hold a series of meetings with COTRs to assess projects together as we've done with both the Wildlife and the Fast Track reviews.

Another important element in staff review is to frame recommendations to past Council actions. These actions may be based on Step Reviews, BOG recommendations and/or conditions previously placed on particular projects by past Council recommendations to Bonneville. This aspect is important during these categorical reviews, because this review is not based on a solicitation, but on the review of ongoing projects. Also the Council has provided numerous reviews and recommendation associated with the Columbia Basin Fish Accords. These recently reviewed projects are part of this review, but in a contextual manner. It is important that these reviews and recommendation be confirmed for these projects during the categorical review, and if necessary aligned to evolving programmatic issues.

Proposal Form Narrative Instructions & Tailored Questions

[Removed the *regional coordination* Q's 7-29-10]

Project Abstract:

Provide a summary of your project proposal that includes the following information: Primary goal of your work; why the work is important (including anticipated results/benefits; please be as quantitative as possible); how the work will be accomplished; where in general the work will be done, for how long, and by whom; and how the effectiveness of your work will be monitored. This establishes the logic path for the project. For proposals based on existing projects, this field is initialized with the Project Summary entered in Pisces.

Explanation of Financial Performance

Discuss your project's financial history – if its fiscal year expenditures are significantly above or below its fiscal year contracted amount, please explain. Keep in mind that it can be tough to compare expenditures to contracted amounts since contracts often span fiscal year and the amount above simply is based on the fiscal year in which the contract started, whereas the expenditures are the sum of invoices paid against the project for the fiscal year.

Major Accomplishments

In addition to summarizing the Deliverables you checked above, in order to help ISRP and Council assess project performance, please address the following: List important activities and milestones; report results and evaluate those results in terms of the project's ultimate goals; whenever possible, describe these results in terms of the quantifiable biological and physical habitat objectives of the Fish and Wildlife Program, i.e., benefit to fish and wildlife or to the ecosystems that sustain them; include summary data tables of key metrics showing trends; and summarize and cite (with links when available) annual reports, peer reviewed papers, and other technical documents. The ISRP will also use this information in its Retrospective Review of prior year results. If your proposal is for continuation of work, your proposal should focus on updating this section. Do not get into the future deliverables of your project – you will provide these later.

Adaptive Management

Please describe any management changes planned or made because of biological responses or information gained from project actions. This would include management decisions at the subbasin, state, or regional level influenced by project results and project modifications based on information from recent research and literature.

Explain your project's significance to Regional Programs

As applicable, expand on the information above and describe how your work relates to or implements other regional documents including: the Council's Draft Monitoring Evaluation Research and Reporting Plan, subbasin plan objectives, Council's 2006 Research Plan, biological opinions, or regional plans such as species-specific plans (e.g., Lamprey Restoration Plan).

Problem Statement

In this section describe the specific problem or need your proposal addresses. Describe the background, history, and location of the problem. For research related projects or research components of a project (e.g., action effectiveness), include a short scientific literature review covering the most significant previous work related to the project, including work of key project personnel on any past or current work similar to the proposal. The purpose of the literature review is to place the proposed research or restoration activity in the larger context by describing work that has been done, what is known, and what remains to be known. All references should be concisely summarized and cited.

Project Objectives

What are the ultimate ecological objectives of your project? For example, the project intends to monitor the status and trend of the spawner abundance of a salmonid population; increase harvest; restore or protect a certain population; or maintain species diversity. Objectives provide a biological and/or physical habitat benchmark against which to develop a monitoring and evaluation program to gauge project success. Objectives should be stated in terms of desired outcomes, rather than as statements of methods and work elements (tasks). In addition, provide objectives that are measurable in biological and/or physical terms. Later, you will be asked to link these Objectives to Deliverables and Work Elements.

Project Relationships

a. Is your project part of a program or coordinated implementation strategy that may be larger than this individual proposal? Please explain how your proposed project relates to, complements, or includes collaborative efforts with other proposed or existing projects, specifically those in your watershed, subbasin, and province. If monitoring and evaluation is conducted by another project or program, identify it by program and project number (if BPA-funded). Include a description of the entity, how your project is coordinating efforts with that entity, what data and analyses generated by the other entity will be reported by your project, and how your project will use that data to inform actions such as prioritizing actions or adapting methods. For example, if this project is the production component of a hatchery program, please list and explain the relationship with the monitoring and evaluation; operations and maintenance; and other components of the program. As another example, if your study supplies information for

an Intensively Monitored Watershed program, explain the relationship. However, only cite projects that relate directly to the specific objectives of this project (i.e., do not list all projects in the basin). If the relationship with other proposals is unknown or is in conflict with another project, note this and explain why.

b. How is your project coordinated with other similar projects in the basin? Please explain how your proposed project relates to, complements, or includes collaborative efforts with other projects similar to yours. For example, how is your (lamprey, hatchery, tagging) project coordinated with other similar projects and or research in the basin?

Existing Project Relationships

Below are your project's existing relationships that cbfish.org already knows about. Please describe additional relationships in the text box below. Explain how your project is related to other projects not listed above.

Facilities & Equipment

All major facilities and equipment to be used in the project should be described in sufficient detail to demonstrate adequacy. For example, the proposal should indicate whether there are suitable (based on contemporary standards) field equipment; vehicles; laboratory and office space and equipment; life support systems for organisms; and computers. Any special equipment, i.e., new technology, to be purchased with project funds should be identified and justified. Please limit this section to only a few paragraphs.

Project References or Citations

Include full citations to any key technical documents specifically related to your project that are cited and summarized in this narrative proposal form. These documents can include cited scientific literature, appendices, data tables, maps, and project reports that are critical to the project. If a cited document is available online, please provide the web address and/or hyperlink. Referenced documents may include subbasin plans, project management plans, monitoring and evaluation plans, watershed assessments, and peer-reviewed articles, especially those articles generated from the project. Please note that the evaluation of your proposal will be based on the proposal as a stand alone document, so all critical information needs to be provided and summarized in the proposal. Citations should be clearly linked to your narrative text references.

Key Personnel

Provide a summary of the personnel required to implement the proposed activities. Include names, titles, job descriptions, hours/Full Time Equivalent (FTE) personnel will commit to the project. For key personnel (e.g., principal investigators, project managers, key subcontractors) provide one-page resumes and describe their duties on the project. Resumes should include name, degrees earned (with school and date), certification

status, current employer, current responsibilities, list of recent previous employment, a paragraph describing expertise, and up to five recent or especially relevant publications or job completions. Emphasize qualifications for the proposed work.

Tailored Questions

Artificial Production:

1. Summarize the HSRG recommendations for this production program.
2. Does the production program take into account the recommendations of the HSRG? If yes, please explain how you plan to implement the recommendations. If not, please explain why you are not implementing the HSRG recommendations.
3. Indicate the pHOS on spawning grounds within the project's area and the pNOB for the hatchery.
4. Is the facility operated as an integrated or segregated production program?
5. Describe the current status of referenced HGMPs.

Research, Monitoring and Evaluation:

1. Type of RM&E will you be doing?

- ☐ Project Implementation/Compliance Monitoring ☐ Status and Trend Monitoring
- ☐ Action Effectiveness Research ☐ Uncertainties Research

2. Describe if any emerging limiting factors such as climate change, non-native species, predation increases, or toxics might impact your project's focal species and their habitat or reduce your project's success? If so, please describe how you are taking into account these emerging factors to ensure the continued success of your project. **This should apply to all projects.*

Tagging:

(from the joint ISAB/ISRP Tagging report 2009-1)

- Please explain why the tagging technology used in this project was selected. Include a discussion of how the cost and applicability of the selected tagging technology influenced your selection.
- Describe any of the innovative approaches that your projects proposes that are in direct support of the ISAB's recommendations to improve techniques for surgical insertion of internal tags, or external attachment of acoustic, radio, or data storage tags that reduce handling time, fish injury and stress.
- For specific tagging technologies, please address the tagging report's recommendations for genetic markers, otolith thermal marking, PIT tags, acoustic tags and radio tags for improving technologies in any way applicable.
- If your project involves ocean port sampling and lower river sampling for coded wire tag (CWT) recovery, address the tagging and tag recovery issues (statistical validity of tagging rates, tag recovery rates, and fishery sampling rates) presented in the

Pacific Salmon Commission's Action Plan to Address the CWT Expert Panel (PSC Tech. Rep. No. 25, March 2008).

- Explain how your tagging and tag recovery rates ensure a statistically valid result for your project.

Habitat Projects:

Describe the process to solicit for, review and select projects; and include the criteria by which projects are rated and selected.

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June 1, 2010

Categorical Review of Research, Monitoring, Evaluation, Artificial Production, Enforcement, Predation, Regional Coordination and other system wide projects for Fiscal Years 2011-2014.

Dear Project Proponent,

The Northwest Power and Conservation Council (Council) and the Bonneville Power Administration (Bonneville) will soon be starting a categorical review of all research, monitoring, and evaluation (RM&E), artificial production, and basin-wide projects in the Council's Fish and Wildlife Program (Program), consistent with the Council's responsibilities under Section 4(h)(10)(D) of the Northwest Power Act. As provided for in the Act, the categorical review will involve reviews by the Independent Scientific Review Panel (ISRP), the public, and the Council and will culminate in recommendations from the Council to Bonneville. The categorical review will have some unique features, however, as described in the attached project-review information package.

Categorical Review

Categorical reviews will enable the Council, the ISRP and Bonneville to review all similar projects (such as fish tagging projects or lamprey projects) funded or proposed for funding through the Program. The advantage of such a broad review is that it can highlight issues common to similar projects such as relevancy, duplication, coordination, scope, and consistency with the broad basin-wide objectives and provisions in the Fish and Wildlife Program. Past project reviews did not compare similar project types in context with one another. The RM&E and artificial production categorical review will include over 190 projects and encompass the largest percentage of Program projects in terms of both funding and diversity.

The Council's 2009 Fish and Wildlife Program focused on performance and committed to developing a monitoring and evaluation framework to improve reporting of Program progress and to inform Council decisions. From this commitment, the Council developed and recently completed accepting comments about a draft Monitoring, Evaluation, Research and Reporting (MERR) Plan. The Council views the concepts in the draft MERR as important to this categorical review and will continue to refine the MERR during the review. For example, the draft MERR proposes placing priority on monitoring higher-risk projects rather than tried-and-tested projects that are generally considered lower risk (such as riparian fencing, riparian planting and culvert replacements.) The Council may consider this and other aspects of the MERR, as the Council and the region work to develop the MERR further over the next several

months. This should not be interpreted as diminishing the Council's commitment to such lower risk projects, rather recognition that differing levels of RM & E may be appropriate.

In furtherance of more coordination, efficiency and effectiveness of monitoring and evaluation within the Columbia Basin, the Council believes that in conducting this categorical review, these key questions should be addressed by all project sponsors:

- 1) What question does your project answer, at what spatial scales over what time period, and for what priority species, limiting factors or habitats?
- 2) How does your project inform a high-level indicator, provide data required to implement the Biological Opinion, or answer a management question?
- 3) What have you learned from the project and how will on-the-ground activities be adapted as a result?
- 4) How your data are made accessible to others and who will likely be the primary users of the data? Can you describe the level of confidence or uncertainty associated with these data?
- 5) How have you communicated the major lessons learned? What have been the major accomplishments of your project to date? Sponsors of all ongoing projects are asked to provide a summary table of their data that illustrates the value of the data collected.
- 6) What have your costs been to date, what do you expect to need in the future and what have you done to coordinate with other monitoring efforts?
- 7) Has the effectiveness of similar projects been measured in the region or is the effectiveness being measured now?
- 8) To what extent is monitoring data provided by a broader monitoring project, perhaps making individual project monitoring unnecessary?

During the science review phase of this categorical review, the Council will be asking the ISRP to report on these aspects specifically, in addition to the other usual components considered by the ISRP.

Program funding for hatcheries and hatchery-related activities accounts for approximately 25 percent of the Program. The Council seeks to improve the effectiveness of Program-funded hatcheries and reduce the negative effects on wild populations. The region continues to conduct in-depth reviews of hatchery operations and effectiveness. These reviews include the Hatchery and Genetic Management Plans (HGMPs) and the Hatchery Science Review Group's (HSRG) report. While the Council has not yet considered the HSRG report for possible adoption into the Fish and Wildlife Program, the Council supports the general principles and scientific analysis of the HSRG to the extent to which they are consistent with the Program. The Council wants to know whether projects meet these principles or contain adequate alternative strategies for

achieving them. The Council will ask the ISRP to consider the results of these in-depth reviews during the science review in an effort to understand the potential effectiveness of hatchery programs.

Thank you for your efforts to implement the Fish and Wildlife Program. We look forward to working with you during the review process.

Sincerely,

A handwritten signature in black ink, appearing to read "Bruce A. Measure". The signature is fluid and cursive, with a long horizontal stroke at the end.

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July 15, 2010

Dr. Eric J. Loudenslager, Chair
Independent Scientific Review Panel
1115 15th Street
Arcata, California 95521

Dear Dr. Loudenslager:

In February 2009, the Northwest Power and Conservation Council (Council) adopted a revision of the Columbia River Basin Fish and Wildlife Program (Program), the first complete revision since 2005. The revised program: 1) strengthens monitoring and evaluation; 2) seeks to improve project performance and fiscal accountability; and 3) continues the Council's commitment to independent scientific review of all projects in the Program. In implementing the revised Program, the Council intends to maximize funding of on-the-ground mitigation efforts while conducting an efficient monitoring and research program that meets the priority needs of the region.

In June, the Council began a review of all research, monitoring, and evaluation (RM&E) projects in the program. Artificial production, mainstem, and systemwide research projects also are included in this category. The list of projects being reviewed as part of the RM&E+ Categorical Review is available at: <http://www.cbfish.org/Portfolio.mvc/Display/484>

The purpose of this letter is to ask the Independent Scientific Review Panel (ISRP) to review the project proposals mindful of the Council's goal to reduce duplicative or excessive levels of research, monitoring, and evaluation. While setting a hard and fast budget-reduction target is premature, the Council intends to recommend appropriate adjustments to projects and apply savings to on-the-ground work. To support that goal, the Council asks the ISRP to consider how and to what extent each project supports and is consistent with the following key policies that are described in the Program and framed here 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? The Fish and Wildlife Program and draft Monitoring, Evaluation, Research, and Reporting (MERR) Plan favor projects

than can generate or develop tools to better inform management decisions and to deploy Program resources more efficiently.

- Is the monitoring or research conducted by a project proportional to the biological risk or project success risk? For example, actions that have a high risk of negatively impacting fish or wildlife or have a high risk of not achieving their intended outcome may require a higher level of monitoring. On the other hand, tried-and-true projects that are generally considered lower risk, such as riparian fencing, riparian planting, and culvert replacement, may require less monitoring. This should not be interpreted as diminishing the Council's commitment to such lower-risk projects, but rather as acknowledging that differing levels of research, monitoring, and evaluation may be appropriate.
- 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? The nine proposed basinwide management questions and associated indicators are posted at: (http://www.nwcouncil.org/fw/program/hli/2009_10.htm). The Council is seeking data for these questions and indicators to help evaluate whether the Program is fulfilling its charge under the Act.
- What does the ISRP see as major accomplishments of these projects, and are the data derived from the projects useful and relevant? The Council has requested each project sponsor provide this information in a summary form with their project descriptions, and we ask that the ISRP evaluate their responses.
- Is the project part of a comprehensive monitoring program? Projects should not duplicate or be redundant with similar efforts elsewhere in the basin and should be designed to operate efficiently and in an integrated, cost-effective manner.
- 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? Data generated by the project should provide new information.
- Does the project's RM&E data have a reasonable certainty or a reasonable confidence level? For example, does the RM&E data meet the preponderance of evidence test? Project data should be designed and reported in a manner that can facilitate their use in adaptive management and guide policymakers in making good decisions related to the project's topic.
- Is the project consistent with the general principles of the Hatchery Scientific Review Group (HSRG)? Projects should 1) address the HSRG's scientific analysis to the extent to which the HSRG's recommendations are applicable to the project, and 2) be consistent with both the Program and strategies to protect wild fish. A project may use adequate alternative strategies to achieve the HSRG principles.
- 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 a an appropriate higher scale, such as a broader geographic scale or population scale?

Projects also should facilitate sharing and reporting of their data with the public in an easily understandable and accessible manner.

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

Consistent with the Council's strengthened commitment to monitoring and evaluating project performance, the revised Program calls for designing a comprehensive monitoring program. As you know, the Council is well on its way to accomplishing this goal, having developed a list of High Level Indicators and a draft MERR Plan, it is important to the current categorical review. The ISRP should feel free to consult the draft MERR Plan when evaluating projects in this review.

Proposals were received by the Council on July 30. Because the ISRP plays a key role in informing our policy decisions, we look forward to the ISRP's advice on how to monitor a large geographic area with complex biological and ecosystem challenges in a cost-effective and efficient manner. We will appreciate receiving your preliminary review by October 14, 2010.

Thank you for your efforts to assist us in implementing the Columbia River Basin Fish and Wildlife Program.

Sincerely,



Bruce A. Measure
Chair

IV. Bonneville's Additional Guidance Related to the FCRPS Biological Opinion RM&E

The Council, Bonneville, Corps of Engineers, Bureau of Reclamation and National Atmospheric and Oceanic Administration have been working together to review FCRPS BiOp RM&E needs and make recommendations for ongoing and new work that is BiOp critical.⁴ This report includes BiOp priority actions that were identified in a collaboration process last year with regional fish management agencies (i.e. Skamania workshop) to develop regional monitoring strategies for anadromous fish population monitoring and tributary habitat and hatchery action effectiveness monitoring (ASMS)⁵. The categorical review will serve as an opportunity to review, refine, and implement ongoing, new or expanded RM&E work that was identified to support the FCRPS BiOp requirements identified within the RM&E Recommendations Report and the Columbia Basin Anadromous Fish Monitoring Strategy (ASMS).

Updated and Expanded Project Implementation Metrics and BiOp RPA Linkages

The review process provides an opportunity to ensure Bonneville is effectively and efficiently directing and implementing RM&E dedicated funding to meet multiple needs. In order to meet these programmatic planning and assessment requirements, a more standardized and expanded set of project implementation metrics data is being requested for all proposed RM&E work undergoing this categorical review. Project implementation metrics include documentation of the target populations, the type of work, the data being collected and the standard methods being applied in the collection of the data.

RM&E project implementation metrics are needed for several phases of the categorical review as well as for tracking and management of projects during the contracting and implementation phases. These implementation metrics are therefore requested by the Taurus project proposal forms and also will be incorporated into Pisces contracts. Bonneville intends to develop data transfer procedures to be able to automatically transfer relevant RM&E project metrics information from the Taurus forms to the Pisces project tracking system.

To ease the burden on proponents in completion of the proposal forms associated with these expanded implementation metrics, Bonneville is offering additional technical support to work with proponents to input monitoring design information into the proposal form. Bonneville is also working to develop metadata generation tools that will use proposal information to help proponents document metadata for datasets they generate later within the implementation and reporting requirements of contracts. This tool will enable proponents to pull required information from the proposal form and Pisces system.

Many existing project deliverables are written in terms of past BiOp needs and Reasonable and Prudent Alternatives (RPAs), and may need to be updated to incorporate more recent assessments and expectations of BiOp RPA linkages to projects. The new proposal form is designed to help proponents write deliverables in terms of more recent BiOp RPA needs. Within

⁴ Recommendations for Implementing RM&E for the 2008 NOAA Fisheries FCRPS BiOp based on AA/NOAA/NPCC RM&E Workgroup Assessments of RPA Actions – May 2010
<http://www.salmonrecovery.gov/ResearchReportsPublications.aspx>

⁵ Columbia Basin Anadromous Fish Monitoring Strategy <http://www.cbfwa.org/ams/FinalDocs.cfm>

the proposal form, proponents will need to validate RPA associations that have been assigned to their projects and write clear deliverables to address any updated BiOp commitments or linkages. If a project's RPA associations are modified by the proponent, the proposed work will be reviewed to validate that it aligns with the intent of the RPA, RM&E Recommendation Report and the ASMS.

For questions regarding project implementation metrics please contact Russell Scranton at Bonneville at 503-230-4412 or rwsranton@bpa.gov.

Additional Guidance and References for Tributary Habitat Monitoring

Habitat action effectiveness monitoring is a critical component of performance tracking and adaptive management needs of the Program and the FCRPS BiOp. The categorical review is intended to help improve the quality and coverage of action effectiveness monitoring across different categories of habitat actions implemented to support these needs. General programmatic level guidance and other information relative to habitat action effectiveness are provided below for consideration while developing proposals.

The current habitat action effectiveness monitoring and assessment strategy being implemented under the Program and FCRPS BiOp requires a combination of project implementation monitoring, a balanced suite of project-level and watershed-scale effectiveness monitoring, and habitat/fish status and trend monitoring for at least one population per major population group. This information is intended to be combined across the Program and with results from other regional effectiveness monitoring programs⁶ to support the development and application of various habitat and fish population relationships and models that will be used to make assessments and inferences about the effectiveness of various actions. For this strategy to succeed, these various components of action effectiveness need to be coordinated across the region with compatible and well documented evaluation designs, field assessment methods, measurements, metrics and derived indicators balanced across different categories of action types (i.e., riparian, instream, fish passage, large woody debris, etc.). The AA/NOAA/NPCC Tributary Habitat RM&E Workgroup and the PNAMP Action Effectiveness Workgroup have been working to advance this strategy and coordinate a network of action effectiveness monitoring at a regional level. Recent guidelines and recommendations from these groups continues to develop and advance through ongoing regional collaboration processes that will be used to further shape monitoring guidelines, direction and the needed balance of habitat action effectiveness work (see www.pnamp.org/pem). Project proponents therefore should consider the following information in the development of proposed work:

- For habitat status and trend monitoring at the watershed or population scale see – Draft Tributary Habitat Monitoring at the Watershed or Population Scale: Preliminary Recommendations for Standardized Fish Habitat Monitoring in the Columbia River Basin⁷ <http://www.salmonrecovery.gov/ResearchReportsPublications.aspx>

⁶ i.e., Washington Salmon Recovery Board, Oregon Watershed Enhancement Board, U. S. Forest Service Pacific Interior Biological Opinion, etc.

⁷ A Workshop on these preliminary recommendations will be held in June, 2010 for BiOp projects performing watershed-level tributary habitat monitoring identified in Table 3 of the RM&E Recommendations Report.

- For effectiveness monitoring at the project or reach scale see - Reach-Scale Effectiveness Monitoring Protocols (revised 2008), <http://www.rco.wa.gov/monitoring/protocols.shtml>
- Evaluation of Effectiveness Monitoring Projects Draft v3.0 – March 2009. <http://www.pnamp.org/node/1770>
- Proponents that propose using a General Tessellated Random Sample (GRTS) design should consider guidance provided by the paper “Integrating Aquatic Ecosystem and Fish Status and Trend Monitoring in the Lower Columbia River: Using the Master Sample Concept” Pacific Northwest Aquatic Monitoring Partnership Integrated Status and Trend Monitoring Workgroup, August 12, 2009 found at <http://www.pnamp.org/node/2666>. The regional Master Sample developed and maintained by EPA and PNAMP may be found at <http://pnamp.science.oregonstate.edu/>.
- Draft Effectiveness Monitoring Inventory Analysis – Preliminary Results, Tetra Tech EC, Inc. May 14th, 2010 <http://www.pnamp.org/node/2961>
- Monitoring Stream and Watershed Restoration. Philip Roni, Ed Quimby, American Fisheries Society. 2005

Bonneville has funded the development of web based tools (see www.onefishtwofish.net.) for assessing the effects of sampling rate, marking rate, and population size on the statistical precision of hatchery and natural escapement estimates, and to facilitate the design of Before-After Control-Impact (BACI) type experiments. In addition, Bonneville will be providing technical and statistical support through technical services contracts to improve project designs or methodologies and the quality and value of data collected. This support is available upon request by the proponent when developing proposals (contact Jim Geiselman at Bonneville to request support at 503-230-5732 or jrgeiselman@bpa.gov).

Additional Guidance and References for Hatchery RM&E

Hatchery monitoring is a critical component of Program and FCRPS BiOp performance tracking and adaptive management needs. The categorical review is intended to help improve the quality and coverage of hatchery monitoring across the different artificial propagation programs.

All stakeholders would benefit if the various components of the monitoring and evaluation programs were coordinated across the region with compatible and well documented metrics, methods, and designs and balanced across different artificial propagation strategies. The Action Agencies will be working with NOAA to convene a technical workgroup with fishery managers to discuss potential studies, management tools, and standard approaches. Guidelines and recommendations through this process will assist the Action Agencies and NOAA when implementing hatchery monitoring through the FCRPS BiOp. To help advance this monitoring and future BiOp assessment needs, the following programmatic-level guidance, recommendations, and other information important to hatchery monitoring is being provided for reference and consideration during development of proposals.

- Recommendations of the *Ad Hoc* Supplementation Monitoring and Evaluation Workgroup, Beasley et al. (2008)⁸

⁸ Beasley C.A, B.A. Berejikian, R.W. Carmichael, D.E. Fast, M.J. Ford, P.F. Galbreath J.A. Hesse, L.L. McDonald, A.R. Murdoch, C.M. Peven, and D.A. Venditti). 2008. Recommendations for Broad Scale Monitoring to Evaluate the Effects of Hatchery Supplementation on the Fitness of Natural Salmon and Steelhead Populations. Final Report

- Recommendations of the Hatchery Supplementation Review Groups (2004 and 2009)⁹
- The precision and accuracy of the estimates of proportion of hatchery-origin escapement Hinrichsen and Sharma 2010.¹⁰

BPA has funded the development of web based tools (see www.onefishtwofish.net.) for assessing the effects of sampling rate, marking rate, and population size on the statistical precision of hatchery and natural escapement estimates, and to facilitate the design of BACI (Before-After Control-Impact) type experiments. In addition, BPA will be providing technical and statistical support for Hatchery monitoring projects through technical services contracts to improve project designs or methodologies and the quality and value of data collected. This support is available upon request by the proponent when developing their proposal (contact Jeff Gislason at BPA for more information - 503-230-3594).

Programmatic Guidelines for Data Management

The 2009 Fish and Wildlife Program and the FCRPS BiOp both stipulate that data and metadata (data documentation) need to be readily available in an agreed-upon electronic format for RM&E and data management projects. This stipulation supports programmatic performance assessments and reporting, and the successful application and integration of RM&E into planning and adaptive management.

To comply with the requirements and objectives of the Program and the BiOp, all RM&E work will need to make available RM&E data and metadata that follow regionally accepted standards and guidelines. Therefore, beginning with Fiscal Year 2011 contracts and proposed work submitted for the categorical review process, all RM&E work should use data and metadata standards and guidelines that have been recommended through the Pacific Northwest Aquatic Monitoring Partnership (PNAMP). If other standards and guidelines are used instead, these need to be described and a rationale provided for why these were used versus PNAMP standards and guidelines. Some of these PNAMP guidelines and recommendations are continuing to develop and advance through ongoing regional collaboration processes shaping programmatic level data management strategy. Further guidance will be forthcoming and the categorical review of data management projects is expected to be initiated within the next year. In the interim, the

of the *Ad Hoc* Supplementation Monitoring and Evaluation Workgroup (AHSWG). 82 pages.
(<http://www.cbfwa.org/csmep/web/documents/general/Documents/FINAL%20REPORT%20AHSWG.pdf>)

⁹ Hatchery Scientific Review Group (HSRG)—Lars Mobrand (chair), John Barr, Lee Blankenship, Don Campton, Trevor Evelyn, Tom Flagg, Conrad Mahnken, Robert Piper, Paul Seidel, Lisa Seeb and Bill Smoker. 2004. *Hatchery Reform: Principles and Recommendations of the HSRG*. Long Live the Kings, 1305 Fourth Avenue, Suite 810, Seattle, WA 98101 (available from www.hatcheryreform.org).

Hatchery Scientific Review Group (HSRG)—Peter Paquet (chair), A. Appleby, P. Seidel, D. Campton, M. Delarm, D. Fast, T. Flagg, J. Gislason, P. Kline, G. Nandor, J. Barr (vice chair), H. Lee Blankenship (vice chair), T. Evelyn, L. Mobrand (chair, 2000-08), S. Smith. 2009. *Columbia River hatchery reform system-wide report*. (http://www.hatcheryreform.us/hrp/welcome_show.action).

¹⁰ Hinrichsen, R.A., and R. Sharma. 2010. The precision and accuracy of estimates of the proportion of hatchery-origin escapement. Draft Report, May 27, 2010, 52 pages. <http://www.pnamp.org/node/2904>

following documents posted on the PNAMP web site (www.pnamp.org) should be used to guide the management of data and metadata associated with RM&E projects:

- “Considerations for Regional Data Collection, Sharing and Exchange” (Schmidt, B., ed., 2009)
- “Regional Guidance on Metadata for Environmental Data” (Rentmeester, S., ed., 2010)
- PNAMP’s “Methods and Metrics Catalogue” (<http://www.monitoringmethods.org/>)
- “Best Practices for Reporting Location and Time Related Data” (NED, 2007)
- “Best Practices for Data Dictionary Definitions and Usage” (NED, 2006)
- “Check List for Organizing Field Collection and Management of Data” (NED, 2006)

For questions regarding data and metadata standards and guidelines please contact Russell Scranton at Bonneville at 503-230-4412 or rwscranton@bpa.gov.