Northwest **Power** and **Conservation** Council

April 4, 2017

MEMORANDUM

TO: **Fish and Wildlife Committee members**

FROM: **Patty O'Toole**

SUBJECT: **Discussion of Draft Research Plan**

BACKGROUND:

Presenter: Patty O'Toole

Summary: Staff will review several issues raised by the comments on the Council's draft research plan and present initial options for addressing the issues.

Relevance: The Council's 2014 Columbia River Basin Fish and Wildlife Program calls for an updated research plan, this task is relevant to Fish and Wildlife Program Priority 2: Implement adaptive management (including prioritized research on critical uncertainties).

Background: As reported previously the Council has been working over the last year to revise the Council's research plan and released a draft research plan for public comment on January 17th of this year. The Council received twelve sets of comments on the draft plan. In April the staff will present several the key issues raised in the comments and will identify some options for addressing these issues. A workgroup of staff and a few Council members met on April 3rd to discuss these issues and options and their suggestions are incorporated. The options are envisioned as a starting point. These may evolve and others may be added during discussion.

Additional information: See a compilation of the comments by topic. This may be a helpful reference document.

Issue 1: Better define what is meant by research

The draft research plan notes that for the purpose of this plan, a common set of characteristics helps identify research projects, such as having a clearly stated hypotheses that links to critical uncertainties and proposed end or completion dates. The draft plan notes that these characteristics help distinguish critical uncertainties research from status and trend monitoring.

Several sets of comments recommend that the plan go further to define types of research and monitoring by including definitions for research, status and trend monitoring, action effectiveness monitoring and evaluation (WDFW, IDFG, ODFW, MFW&P, CRITFC). Commenters recognized the overlap between status and trend monitoring (WDFW, IDFG, ODFW, MFW&P, CRITFC) and expressed concern that if the Council proposes in the research plan to separate research from monitoring and evaluation in order to treat these categories differently, clearer definitions are needed.

For example, IDFG commented that approximately 25 to 30 "pure research" projects are currently funded under the Program and they presume these projects will be subject to the process identified in the revised research plan. They also commented that it is not made clear how research elements embedded within monitoring projects will be impacted by the new research plan and recommended that Council interact with project sponsors to ensure the designations are accurate.

WDFW commented that the research plan proposes to separate research from monitoring and evaluation and indicates that “research seeks to resolve critical uncertainties identified in the Council’s research plan and assesses new methods and technologies to improve the program,” but no definition for status and trends monitoring, effectiveness monitoring, and evaluation is offered. Since there can be considerable overlap between these categories, the addition of a definitions table, would help to clarify these differences.

WDFW further stated that some of the “best” status and trends monitoring projects often add research elements to leverage the existing monitoring infrastructure. This is a cost-effective approach because the status and trends monitoring programs can be modified to collect the quantity and quality of data to test specific hypotheses and address critical uncertainties. The overlap for projects that combine status and trend monitoring and research may create a dilemma for the reporting, tracking, and assessment of critical uncertainties in the research plan because of their dual purpose. WDFW recommended that the Council and Bonneville work with project sponsors to identify projects or work elements of projects that are considered research and their reporting requirements. MFW&P agreed that in practice, work conducted through some Bonneville Power Administration funded contracts spans a continuum of research, monitoring, and evaluation elements. This can be a cost-effective and efficient approach that takes advantage of existing infrastructure and monitoring datasets to address specific needs within the research plan.

Options include:

a. Add a table of definitions (relying on program definitions as much as possible) to section 1 – B and add important research elements currently mentioned in the 2017 Program including:
   - Research seeks to resolve critical uncertainties identified in the Council's research plan and assesses new methods and technologies to improve the program.
   - All research projects must be consistent with the scientific method and appear likely to produce an outcome within a designated time frame. The research plan should prioritize critical uncertainties for the program and guide funding recommendations.
   - Research projects will address hypotheses relevant to management decisions, with the results published in peer-reviewed scientific journals.
   - Research efforts should consider potential impacts on and effects from other activities occurring in the same geographical area as the proposed research activity.

b. Rely on the required annual reports where project sponsors can self-identify research and monitoring. The Council can then use this information to identify research related actions that should fall under the guidance of the research plan. Add question to the existing reporting template asking sponsors to identify which critical uncertainty their research is addressing.

c. Delegate a team to work with project sponsors to identify which projects are research, which are monitoring and evaluation, using the 2011 designation of research as a starting point. At this time, distinguishing between research and monitoring using Pisces work elements is not possible.

Issue 2: Adjustments to priorities

Research priorities are described in the research plan in two sections: immediate priorities (tributary habitat and fish propagation research) and the emerging priorities (list on page 8 of draft plan) and comments were received specific for these sections, but comments were also provided generally about which themes or uncertainties were of the highest priority.

General comments on priorities were received included support for various specific themes and uncertainties. These comments varied widely and staff will continue to review these. At this time the staff is not prepared to suggest alteration to the priorities described in the draft plan except as is described below.

a. Immediate Priority - Tributary Habitat Research

The draft research plan identifies tributary habitat research as an area of research that is in need of focused attention. The draft plan notes that it is not yet clear that progress is being made on resolving the important underlying uncertainties about the nature and extent of survival benefits from tributary habitat actions, or how long and at what cost it

will take to make significant progress. This immediate priority received good support from WDFW, IDFG, NMFS, UCSRB, and ODFW.

IDFG noted that the Council and BPA have invested heavily in tributary habitat research and discussions to identify the benefits of tributary habitat improvements needs to continue on the fast track. As Council engages in discussions with the managers as well as its science panels, they encourage Council to not lose sight of the distinction between habitat improvement actions, associated fish in and fish out status and trend monitoring and habitat improvement effectiveness monitoring. IDFG believes the subject in the spotlight should be effectiveness monitoring and answering the question of whether habitat improvement actions are positively influencing life- stage specific fish survival or other measures of productivity or production. They believe the Research Plan would benefit from some discussion of the differences among these elements with confirmation that the focus is on effectiveness monitoring.

NMFS suggested that the present limitation of knowledge is not whether habitat restoration "works"; rather, the largest uncertainties surround the design and implementation of a habitat restoration delivery system and whether that system is applying an adequate amount of the necessary habitat treatments and in the right locations.

Options include:

a. Refine the description in the draft research plan to be consistent with current staff work on tributary habitat research and monitoring (see below).

The program invests significantly in tributary habitat improvements for salmon and steelhead, based on the underlying assumption that improvements in tributary habitat conditions not only boost survival and productivity of ~~juvenile~~ fish in the tributaries~~that life stage~~ but also contribute ~~have significant life-cycle/adult return~~ survival benefits at the population scale. For some habitat actions, ~~I~~it is not yet clear if the current level of understanding about the nature and extent of the changes resulting from the action is sufficient to determine whether it has reduced the effects of limiting factors and is improving habitat conditions and benefiting fish. ~~that progress is being made through research and evaluation on resolving the important underlying uncertainties about the nature and extent of survival benefits from tributary habitat actions.~~ For habitat actions requirement more effectiveness research, it is unclear how long and at what cost will it take to make a determination of effectiveness. ~~significant progress so as to conclude the research activities.~~

b. Immediate Priority - Fish propagation research

Comments on this immediate priority varied. CRITFC commented that the research plan is too focused on potential negative impacts from using hatchery fish and instead recommends using research to determine how the region can best use hatcheries to support recovery.

WDFW commented that currently the basin lacks a basinwide framework to address critical uncertainties hatchery research, and recommended that the Council consider a basinwide framework to evaluate hatcheries as described in the “Recommendations for Broad Scale Monitoring to Evaluate the Effects of Hatchery Supplementation on the Fitness of Natural Salmon and Steelhead Populations” proposed by the Ad-Hoc Supplementation Group.

NMFS commented that supported including fish propagation as one of the two immediate priorities to better understand the impacts of both harvest and conservation programs, given the predominance of hatchery origin fish in the Columbia River Basin. NMFS suggested that it would be useful to include the critical uncertainties related to the impacts that hatchery-origin juveniles have on carrying capacity and density-dependence under the Fish Propagation theme as well.

IDFG noted that the ISAB/ISRP Critical Uncertainties Report (Figure 1) clearly identified fish propagation as an area of continuing critical uncertainty with respect to potential impacts associated with the release of hundreds of thousands of hatchery fish annually. While IDFG agreed that this topic is relevant and worthy of continued investment and investigation, they urged the Council to not confuse routine monitoring and evaluation (and associated data manipulation) with focused research. IDFG is concerned that the tools do not exist in BPA's Pisces application to fully make this level of distinction at the project work element level and that it is likely that monitoring and evaluation are being inappropriately counted as research.

<u>Options include:</u>

a. Update the description of this priority to reflect that the RRS policy review (2016) is concluded and that the projects will undergo further review including independent science review during the next review of these projects
b. Expand current language to further advance a development of a basinwide framework to evaluate hatcheries per WDFW comment referencing the recommendations of the Ad Hoc Supplementation Work Group (needs additional discussion to determine if this would be useful).

c. Emerging research priorities

The Spokane Tribe expressed concern that impacts to blocked area habitats and the native resident species continue to be disregarded in the draft research plan. They suggest that that habitat improvements and hydro system operational changes to benefit lower river populations come at a cost to these marginalized regions. They commented that the proposed research plan would further exacerbate uncertainties outside the anadromous zone.

The Spokane Tribe also commented that the population structure and diversity of both anadromous and resident species should be a priority especially within blocked areas as these are the species of value to those regions. They further indicated that blocked areas may be the basin’s most promising refuge when facing climate change.

CRITFC commented that the predation theme should not be restricted to marine mammal predation. They commented that other predation agents such as avian and piscivorous fishes should be included. CRITFC commented that escapement goals are a subjective policy decision designed to balance present use with future production and should be stricken from this section. They commented that science can be used to inform discussions about escapement goals, but science cannot determine what the proper goal should be.

Options include:

a. Integrate language to clarify the scope of the research plan to address concerns about nexus to the hydrosystem (see example below) and clarify its relationship to the Program.
b. Break out the reintroduction feasibility measure as separate bullet.
c. Add hydrosystem flow and passage (spill) as it is a direct Program responsibility and a relevant issue.
d. Consider removing reference to escapement goals or reword.

Example for a:

(insert into introduction). The Council's fish and wildlife program is implemented largely by the federal agencies on the Columbia River. A central concept of the Northwest Power Act is that the ratepayers of the northwest who benefit from the power and other benefits afforded by the Columbia's system of federal and non-federal dams should also bear the costs of the program intended to protect and mitigate the system's effects on fish and wildlife. The Bonneville Power Administration - the federal power marketing agency - has a particular obligation in Section 4(h)(10)(A) of the Northwest Power Act to use its fund and other authorities to protect, mitigate and enhance fish and wildlife "in a manner consistent with" the Council's fish and wildlife program, power plan, and purposes of the Act. All federal agencies operating, managing or regulating Columbia hydroelectric facilities – the Corps of Engineers and Bureau of Reclamation as well as Bonneville (with regard to federal projects) and FERC (with regard to non-federal projects) - have a separate obligation under Section 4(h)(11)(A)(ii) to exercise their responsibilities taking into account the Council's fish and wildlife program to the fullest extent practicable at every stage of decision-making.

Through these mechanisms the federal river management agencies implement passage, flow, water management, reservoir operations and other mainstem measures to protect and improve survival of fish in and through the hydrosystem. Bonneville and the other agencies also implement hundreds of habitat and propagation projects worth hundreds of millions of dollars annually in the tributaries, estuary, and mainstem reaches, all consistent with the program. And finally, all these federal agencies invest in or oversee research, monitoring and evaluation activities consistent with the program in an adaptive management effort at assessing and improving how the program protects and mitigates fish and wildlife responsibly. With the help of the Independent Scientific Review Panel

(ISRP) established by the Council under the Act, the Council reviews projects proposed for implementation and the results of project implementation, The purpose of this review is ensure that all projects are based on sound science, provide benefits to fish and wildlife, and are consistent with the priorities and measures in the program.

The research plan is not part of the program itself, but it is called for in the program and is an expression of and consistent with the research measures and the substantive priorities and procedural guidelines for research stated in the program. The Council intends the research plan to be guidance in implementing the research elements of the program to all the federal agencies with responsibilities toward the Council's program under the Act.

Issue 3: Implementation

Comments regarding implementation of the research plan were varied and included comments about the mechanics of developing RFPs, reiteration of the concerns in Issue 1 above and clarifying the proposal development and decision process and generally about collaboration.

CRITFC commented that instead of the Council and BPA preparing an RFP that will be submitted to an independent science panel for review, it would be more productive and efficient to task the ISRP or ISAB with assessing the scope of projects that need to be developed in the basin. The Council and BPA should be involved in soliciting the best input on how best to put these RFPs together. This should involve interviewing various regional entities, including the Tribes and CRITFC.

CRITFC commented that reviews and check-ins should be considered in the light of adding value to the project from a science prospective. The key questions seem science based, but the examples provided cross over to policy decisions.

CRITFC commented that the CRITFC Accord project supporting the Upper Grande Ronde S&T monitoring project provides substantial annual reports every year on all significant findings that can be differentiated into data trends (e.g., water temperature trends) and research results (e.g., interpreted water temperature data, that might show how riparian restoration relates to improved water temperature). It is not simple to summarize all results electronically, unless this means submitting an annual report on R/M/E with various chapters on data and analyses. If Bonneville Power Administration (BPA) or The Council has a specific issue it is tracking to which results from R/M/E can be linked, this could be entered into forms so agencies could most easily use the information. Many projects are holistic and require digesting an entire report to understand its value.

The Council might like to have pointers to key aspects of R/M/E in each annual report or in the files at each agency. That way, rather than try to find a form on which to report all significant findings, there could be a guide to where a study of the issue is available and where the data are that support the issue. Sometimes data are needed to be collected

in a special manner to answer a specific question, so there are differences in what something like water temperature really is. Whether it can be applied to answer a specific question depends upon on how it was collected, many of these aspects of research can be categorized. (CRITFC)

MFW&P commented that the Research Plan should make clear which contracts with RM&E elements would be affected by an annual administrative check in for research projects and consideration should be given to avoiding redundant reporting processes in situations where project sponsors already submit reports using the existing RM&E template.

Snohomish PUD suggested that the plan lack decision criteria for choosing research proposals, and referred the Council to FERC criteria for research. Snohomish suggested that the Council include the FERC criteria in the research plan. These comments suggest that it would be beneficial to add more information on the Councils project solicitation and review process which is where these issues are typically addressed. The intent was never to cover this detailed in formation in the research plan, but the Council may want to provide information to describe when and how proposals are developed, reviewed and decisions occur.

Bonneville offered comments to support ISRP reviews (through revisions of the CU) of research projects should be prepared based on study designs, with a recommendation to continue research based on the sponsors completion of analysis. Put projects in categories, three years or five years, ask for intermittent reports to ensure analysis and reporting of research and progress especially with limitation of new data collection requirements. Bonneville suggested that although the draft research plan prioritizes the two research themes, it should continue tracking the research in the other themes as well.

NMFS noted that a critical step toward successful execution of the research will be to provide a decision support mechanism for prioritizing funding to the most timely and relevant work. Likewise, the Program will benefit most through establishing an adaptive management feedback loop that will provide adequate opportunities for research efforts to deliver findings and key information to the Council and other parties in a manner that advances our collective understanding.

NMFS also commented to the importance of adopting basin-wide goals in the previous comments provided on the ISAB report through efforts such as the Columbia Basin Partnership as this topic remains relevant to the delivery of an effective research program.

<u>Options include:</u>

a. Add a paragraph describing project review, proposal forms, science reviews, etc. for new projects.
b. Address definition issue in see issue 1 above.

Issue 4: Reporting and synthesis

Several comments related to how research is reported and synthesized. The UCSRB commented that they would also like to see more effort put toward the synthesis and delivery of research results so that these funds are not a stranded investment. Models such as life cycle models and/or the Ecosystem Diagnosis and Treatment (EDT) model should be explored as a tool to apply research results to management decisions.

Staff from the UCSRB have participated in several workshops covering Council research topics (e.g. the RRS workshop) and found them very useful and informative for both managers and scientists in attendance. They encourage the Council to consider workshops such as this to be a key component of reporting.

WDFW recommended that more careful consideration be given to the annual reporting requirements of short-term research projects (i.e., less than three-year projects) because they are concerned that reporting of results from hypothesis testing after the first year of study may lead to incorrect conclusions because of limited information.

WDFW recommended that Council consider an option for the final research report as a peer-reviewed publication. This is likely to meet the Council's reporting requirements with the benefit to the F&W program of the peer-review process. The Critical Uncertainties Report (ISAB/ISRP 2016-1) noted that RM&E projects have already acquired massive amounts of data that require sophisticated meta-analyses and synthesis in order to be most useful for the F&W Program, and that these types of analyses are not currently being performed. Thus, periodic synthesis reports by research theme could help to inform the Council's adaptive management approach. WDFW recommended that Council, BPA, and project sponsors work together on refining research reporting and synthesis requirements.

ODFW, MFW&P and NMFS similarly commented on the need for synthesis and reporting of information gained from the multitude of research activities under the Columbia Basin Fish and Wildlife Program noting that it is critical to fully understand system-wide benefits and impacts as well as Program effectiveness. Considering threats isolated by themes disregards the interrelated dynamics of the system and constrains a holistic approach that uses all available information. The managers suggested that this concept of synthesis, which can only be achieved by data sharing and coordination, should be highlighted as a standalone item in this research plan and NMFS suggested that without a forum for technical engagement, the aggregate benefit of the FWP investment in data collection and analysis is under-appreciated and under-utilized. Current project reviews as they are designed do not effectively serve this purpose. Some form of project integration, or application of knowledge to the overall Program would be a significant improvement and advancement.

Bonneville too commented that the Council should consider new or existing communication tools to optimize the distribution of meaningful research results

noting that the region does not solely rely on peer reviewed journal articles as the source of information.

ODFW commented that for the proposed reporting of research projects, the plan should clarify whether it is redundant with the present contract reporting routines and cycle for “non-research” projects.

For reporting, IDFG noted that some additional clarification in this section will be helpful. In Section IV.A.2 (pg. 9), the authors discuss the annual administrative check-in process for "research projects" then reference the updated research, monitoring and evaluation (RM&E) reporting template that is required. On the following page (pg. 10) in Section IV.B., the authors discuss the importance of separating research reports from monitoring reports.

Options include:

a. The Council will employ a variety of options for synthesis and reporting of research findings including:

    - Using topic-based science-policy forums, include synthesis of findings as part of forum preparation, use the forum for discussion of results and identifying opportunities applying research findings to management decisions.
    - Request ISAB synthesis for certain topics.
    - Request researchers to work together to synthesize findings
    - Develop a stand-alone group/task force to synthesize findings
    - Council staff or contractor develop synthesis
    - Support Program recommendations that findings should be published in peer review science journals.

b. Revise reporting language to improve clarity.

Other comments for discussion as time allows

Omissions

LCEP commented that the draft research plan gives little consideration to non-fish species throughout the draft. Impacts from the hydropower system on habitats for herptiles, avian species and wildlife should be considered throughout the list of research questions.

Bonneville noted the omission of research, monitoring, and evaluation that is undertaken by other hydroelectric dam owners and operators in the Columbia River Basin to comply with their water quality permits, FERC licenses, and mitigation agreements. Consistent with the Northwest Power Act, the Council program should address the effects on fish and wildlife from the overall hydroelectric system in the basin with a comprehensive RM&E plan that integrates these mitigation efforts for non-federal hydroelectric projects.

Scope of research plan/Nexus

Snopud comments that the Council should ensure the fish and wildlife actions funded by Bonneville are informed, efficient, and effective at mitigating for the impacts caused by the operation of the federal facilities marketed by Bonneville.

ODFW noted that Critical uncertainties for focal species in the Fish and Wildlife Program that are not listed under the U.S. Endangered Species Act need to be addressed.

Bonneville commented that consistent with the Northwest Power Act, the Council program should address the effects on fish and wildlife from the overall hydroelectric system in the basin with a comprehensive RM&E plan that integrates these mitigation efforts for non-federal hydroelectric projects.

General comments and process

ODFW views this draft as a work in progress that will require more frequent updates to respond to future factors that influence effective implementation of the Fish and Wildlife Program and its future amendments, as well as gauge progress towards addressing critical uncertainties.

Both the UCSRB and CRITFC support a more collaborative, deliberate process.

The USGS commented that identifying the metrics for “success” of the program is important.

The USGS suggested that presented the list of uncertainties in the appendix may detract from their importance. Consider moving the list into the body of the research plan.

LCEP commented that the draft research plan gives little consideration to non-fish species throughout the draft. Impacts from the hydropower system on habitats for herptiles, avian species and wildlife should be considered throughout the list of research questions.

Bonneville noted the omission of research, monitoring, and evaluation that is undertaken by other hydroelectric dam owners and operators in the Columbia River Basin to comply with their water quality permits, FERC licenses, and mitigation agreements.

Bonneville suggested highlighting lessons learned and changes from the 2006 research plan especially with regard to objectives, methods, procedures, and adaptive management.

Bonneville suggested that the Council consider including figures or conceptual diagrams of research data flow and how this plan streamlines (or could streamline) those efforts.

Bonneville suggested adding a table of contents.