February 1, 2016

MEMORANDUM

TO: **Council members**

FROM: **Erik Merrill and Jim Ruff**

SUBJECT: **ISAB and ISRP Report - Critical Uncertainties for the Columbia River Basin Fish and Wildlife Program**

BACKGROUND:

Presenters: Steve Schroder, ISRP Chair; Greg Ruggerone, ISAB Chair; Alec Maule, ISAB/ISRP; and other ISRP and ISAB members on the phone

Summary: The 2014 Fish and Wildlife Program calls for the Northwest Power and Conservation Council to review ongoing research and revise the Program's Research Plan. The current Research Plan (Council Document 2006-3) lists 44 critical uncertainties, defined as "important knowledge gaps about resources and the functional relationships that determine fish and wildlife productivity in the Columbia River ecosystem." To help update the Research Plan, the Council asked the Independent Scientific Advisory Board (ISAB) and Independent Scientific Review Panel (ISRP) to reexamine these uncertainties and to recommend revisions after reviewing progress achieved by current research, monitoring, and evaluation projects within the Program.

The ISAB and ISRP's full response to this request is organized in two parts. Part 1 presents 50 critical uncertainties organized under 14 themes. A rationale is provided for each uncertainty to explain its importance to the Program. Some of these critical uncertainties were revised from those in the 2006 Research Plan, and others are new. Part 2 presents an

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evaluation of the extent to which 187 ongoing Program projects (those with a research, monitoring, or evaluation component) have addressed, or could potentially address, the 44 critical uncertainties in the 2006 Research Plan. Appendix D to Part 2 provides a synopsis for each reviewed project. The synopsis indicates which of the 2006 uncertainties were directly or indirectly addressed by the project and includes brief comments about methods and results.

The following recommendations were developed during the ISAB and ISRP's evaluation and are provided to help revise the Research Plan and improve research within the Program during the next five years.

- Improve communication on research issues and results among project proponents, the public, governmental entities, the Tribes, and others involved with the Basin's water, land, and fish and wildlife resources. Communication leads to partnerships, pooling of resources, spreading of innovations, public support, and solutions that would be difficult for one or a few organizations to achieve alone.

- Foster efforts to synthesize information generated by independent studies by improving the rigor, consistency, and availability of annual reports; convening workshops or symposia; and funding special projects as needed to compile, analyze, and review progress in addressing uncertainties.

- Recognize that research on the expected impacts of climate change and human development in the Basin should be taken into account when setting future Program objectives.

- Support research to identify thermal refuges and ways to secure the availability and quality of water essential to achieving Program objectives.

- Recognize that toxic contaminants are pervasive in the Basin and support research to determine threats to fish, wildlife, and people because of their persistence and bioaccumulation in food webs.

- Support research to guide the management of non-native species. As conditions change, environments may increasingly favor non-native species, some of which are valued and can be managed.

- Continue supporting research on artificial propagation that will help to measure the benefits and risks to natural populations. Encourage research to help develop biological escapement goals for the Basin's salmonid populations and refine approaches for harvesting surplus hatchery fish.

- Expand research to identify and track changes in population structure and genetic diversity of focal species. Loss of genetic diversity may compromise the long-term production and resilience of fish and wildlife in the Basin.

- Continue to support and demand rigorous monitoring and evaluation programs that have well established objectives and potential for basinwide synthesis. Such evaluation is needed to understand the benefits and risks of Program actions and to manage adaptively.

- Recognize that evaluating the effectiveness of conservation actions is complicated by natural variability and statistical sampling error. Many years of careful monitoring are typically required to confirm small but meaningful changes in ecological outcomes from habitat restoration or supplementation projects.

- Support research on ecological interactions in mainstem, lower Columbia River, estuary, ocean plume, and ocean habitats. Understanding the factors in each habitat that limit population growth will improve management of all four H's (habitat, harvest, hatcheries and hydrosystem).

Relevance: The ISAB and ISRP report provides information to assist the Council's update of the Fish and Wildlife Program's research plan.

Workplan: ISAB and ISRP reviews are called for in the Council's work plan and the Fish and Wildlife Program. The work plan also includes the research plan update.

More Info: Executive Summary (11 pages)
Full Report (168 pages)
Appendix D: ISRP and ISAB Comments on Annual Reports for Fish and Wildlife Program Projects with a Research, Monitoring, and Evaluation Work Element (381 pages)
Uncertainties Database