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October 6, 2015

### MEMORANDUM

**TO:** Fish and Wildlife Committee Members  
**FROM:** Tony Grover and Staff  
**SUBJECT:** Continued discussion of recommendations to implement Program priorities

#### BACKGROUND:

**Presenter:** Fish Division staff

**Summary:** Continue the discussion of Fish and Wildlife Priorities implementation, specifically of the set of *near-term* implementation opportunities

**Relevance:** Addresses implementation of the Council's 2014 Columbia River Basin Fish and Wildlife Program (Program)

**Workplan:** Addresses Council annual workplan objective #2, Promote regional fish and wildlife recovery – implement new 2014 Fish and Wildlife Program

The Council identified seven emerging Program priority areas in the [Investment Strategy](#) chapter of the 2014 Fish and Wildlife Program to implement recommended measures that expand existing work or expands the program in new directions. These are:

1. Provide for funding *long-term maintenance* (Appendix P) of the assets that have been created by prior program investments
2. Implement *adaptive management* (including prioritized research on critical uncertainties) throughout the program by assessing the effectiveness of ongoing projects, developing program objectives when appropriate and taking into account the effects of *climate change*

3. *Preserve program effectiveness by supporting: (1) expanded management of [predators](#); (2) mapping and determining hotspots for [toxic contaminants](#); and (3) aggressively addressing [non-native and invasive species](#)*
4. *Investigate [blocked area mitigation](#) options through reintroduction, passage and habitat improvement, and implement if warranted*
5. *Implement additional [sturgeon](#) and [lamprey](#) measures (passage and research)*
6. *Update the [subbasin plans](#) most in need of updates*
7. *Continue efforts to [improve floodplain habitats](#)*

The Fish and Wildlife Committee has been discussing implementation of the Program priorities for several months. Staff presented a comprehensive [discussion](#) of all program priorities at the August Committee meeting along with options for implementation including new project [solicitation options](#). In August, the staff and Committee discussed a set of [possible actions](#) for three implementation timeframes: immediate (FY 2016); near-term (FY 2017); and extended term (beyond 2017). These are useful reference documents. Staff developed a table for tracking implementation of the program priorities (see table 1).

### ***Immediate implementation actions***

These actions were addressed by the Committee in August and September for implementation in FY 2016. The full Council will be considering one of these, a habitat assessment to address part of priority 4 at the October Council meeting. These actions will be tracked by staff and will be brought back to the Fish and Wildlife Committee when warranted.

### ***Near-term implementation actions***

In September the Committee began discussion of a set of actions that is targeted for implementation in FY 2017. Staff will review these actions with the Committee in October (EP# refers to the Program's emerging priority number):

## **I. Actions requiring Council Coordination with others**

### **A. EP 3 - Consider ongoing or additional assistance for states' efforts to prevent the establishment of quagga and zebra mussels.**

**Proposed action** - The fish and wildlife committee suggests the Council coordinate with regional partners, such as the Pacific NorthWest Economic Region (PNWER) and the Pacific States Marine Fisheries Commission (PSMFC), to increase the effectiveness of attempts to communicate the urgency of preventing the establishment of quagga and zebra mussels in the Columbia River basin.

## **B. EP 2- Complete water temperature analysis and modeling in the Grand Coulee to McNary reach of the Columbia River**

**Proposed action** –The fish and wildlife committee suggests the Council send a letter to the Corps of Engineers and the mid-Columbia PUDs acknowledging and complimenting the current temperature modeling efforts underway, urging completion of those modeling efforts, and encouraging development of a Columbia Basin systemwide water temperature model for the mainstem Columbia and Snake Rivers. In order to take into account the potential effects of climate change, the region will need to evaluate future hydrologic and temperature alterations associated with climate change. A key aspect of such an assessment is for the federal and non-federal hydropower project operators to work collaboratively to complete the water temperature modeling capabilities in the mid-Columbia reach of the mainstem Columbia River from Grand Coulee Dam through the Hanford Reach.

**Rationale:** Climate records indicate the Pacific Northwest has warmed about 1° C (or 1.8° F) since 1900, or about 50 percent more than the global average warming over the same period. The warming rate for the Pacific Northwest over the next half century is projected to be in the range of +0.2-0.9° C (or +0.4-1.6° F) per decade. Projected annual precipitation changes for the region over the next few decades are relatively modest and likely to be indistinguishable from natural variability. The projected future changes in temperature and precipitation will alter the snow pack, stream flow, and water quality in the Columbia Basin with the following anticipated impacts:

- Warmer temperatures will result in more precipitation falling as rain rather than snow
- Potential for more winter flooding, affecting salmon eggs and overwintering juvenile fish
- Snowpack will diminish, particularly in lower-elevation watersheds, with altered runoff timing. Peak river flows will likely shift to earlier in the spring
- Water temperatures will continue to rise, affecting adult and juvenile salmon migration and disrupting growth
- Summer flows are likely to be lower, affecting adult and juvenile salmon migration

These temperature and hydrologic changes are expected to have a variety of interrelated impacts on aquatic and terrestrial ecosystems in the Columbia River Basin.<sup>1</sup> The Council's Fish and Wildlife Program recognizes the need to assess and, where necessary, respond to the [impacts of climate change](#), which could threaten the program's past and ongoing investments in habitat improvements in the Columbia River Basin.

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<sup>1</sup> Total dissolved gas (TDG) is directly related to water temperature and hydrologic changes in the mainstem and will continue to be an important parameter if spill for fish passage remains a permanent operation. Accordingly, the Corps is in the process of adding the TDG parameter to each of the federal reservoir CE-QUAL-W2 water quality models.

To conduct a temperature assessment of the mainstem Columbia River, a collaborative effort by federal and non-federal project operators of developing water temperature models for the mid-Columbia reach of the river is needed to complete the temperature modeling capability for both the mainstem Snake and Columbia rivers. This modeling work will enable the region to better assess the potential effects of climate change and project operations on summer water temperatures in both rivers.

The current status of the water temperature modeling effort in the mid-Columbia reach is that the model development is largely completed for the Grand Coulee, Chief Joseph, Wells and Rocky Reach reservoirs. Temperature model development is currently underway by Grant County PUD in the Wanapum and Priest Rapids reservoirs and is expected to be completed in early 2016. Additional temperature model development is needed in Rock Island reservoir and for the Hanford Reach.

Note that additional work will also be needed to link the individual water temperature models together into a Columbia-Snake river system application.<sup>2</sup> Developing a system application temperature model will require calibration, sensitivity analysis, and related activities once all the reservoir models are completed. Climate change and current condition (or baseline) scenarios will also need to be prepared, providing all the pertinent streamflow and relevant ambient conditions and inputs for the system application and subsequent temperature modeling analysis.

## **II. Actions that require the Council to convene a workgroup or science policy forum**

### **C. EP 3 - Convene a technical workgroup to determine predator management effectiveness and develop a common metric for predation**

**Proposed action** -- The fish and wildlife committee recommends the Council should convene a technical work group consisting of federal action agencies, state and federal fish and wildlife agencies, tribes, mid-Columbia PUDs, and others, to evaluate: a) the effectiveness of predator management actions; b) the need to expand predator management to other species of interest, and c) the utility of developing a common metric to measure the effects of predation on salmonids, such as salmon adult equivalents, to facilitate comparison and evaluation against other limiting factors. If a metric is developed and agreed upon, future predator management evaluations funded by the action agencies should include a determination of the effectiveness of such actions and use the common predation metric in their reports.

**Rationale** – During the 2013-14 program amendment process, it was recommended that the revised program should explicitly address the overall effects of predation on native

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<sup>2</sup> This is no small task. Development of a system planning temperature model application tool has not yet begun; such a modeling tool will be needed for climate change modeling analyses.

fish. This is also consistent with an ISAB recommendation that identified predation as one of the threats to sustainability. NOAA Fisheries specifically recommended the program should strive to measure the overall effects of predation on native fishes, particularly salmonids, and express the effects in a common term such as salmon adult equivalents. By developing and agreeing to use a common metric for predation, it would facilitate comparison and evaluation of predation against other limiting factors. Consistent with the 2014 Fish and Wildlife Program, the most efficient way to accomplish this task is to convene a regional technical work group.

**D. EP 6 - The Council will hold discussions or a workshop with entities in the region to discuss timing and scope of a subbasin plan update**

**Proposed action:** The Council hold one or more discussions, perhaps as a workshop in conjunction with a regular Council meeting, with interested parties from the region to discuss which subbasin plans need to be updated, how and when. The staff suggests that this topic be added to the agenda of the next regional coordination meeting to gather some input from the regional coordination entities.

**Rationale:**

The Fish and Wildlife Program includes a description of the history, use<sup>3</sup> and future needs of subbasin plans. “In 2004-05 and 2010-11, the Council adopted into the program 59 subbasin management plans developed by subbasin planning entities consisting of state and federal fish and wildlife agencies and tribes (agencies and tribes) and other regional and local organizations”. The Program language acknowledges that ... “in the 10 years since subbasin management plans were adopted, continued restoration, recovery, implementation, and planning work has occurred. The Council recognizes that physical conditions and priorities may have changed, such as in areas where dams have been removed or where substantial restoration work has occurred, and in the EP 6 of the Program, calls for updating the subbasin plans which are most in need of updating. Subbasin plans provided the foundation for many ESA recovery plans and state management plans. For the Council, subbasin plans remain the primary planning documents to guide implementation; however, in some areas of the basin, these other plans are more current than subbasin plans.”

**E. EP 7 - Council hold a science-policy forum to discuss floodplain reconnection with interested entities in the region. (Implements EP 7)**

**Proposed action:** Staff recommends that the Council hold one or more discussions, perhaps as a science – policy forum, to assess and evaluate the status of floodplain

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<sup>3</sup> In 2011 a survey was conducted regarding various regional entities’ interest and use of subbasin plans. See [results](#) of the survey.

reconnection at varying scales in the Columbia River Basin. Staff suggest that interested parties from the region come together to discuss whether this work is being shown to be effective in the basin and where there may be additional opportunities. The staff will gather input on this topic at the next regional coordination meeting. Staff also recommend the Council consider teaming with CRITFC to co-sponsor and participate in their next Future of the Salmon conference in the spring of 2016, which is likely going to focus on flood management issues, including floodplain reconnection.

Rationale: The Program contains measures that call for reconnecting floodplains through passive and active improvements in channel structure and geomorphology and re-establishing natural river processes in mainstem reaches and tributaries of the Columbia River. Measures call for mainstem efforts to reconnect protected and enhanced lower tributary habitats to protected and enhanced mainstem habitats, especially in the area of productive mainstem populations. Another measure calls for continuing actions to reconnect the river to its floodplains wherever possible in the mainstem, with special emphasis on the estuary and lower Columbia River. Rivers have increasingly been recognized as being actively connected with off-channel environments. These hydrologic connections prolong physical storage and enhance reactive processing to alter water chemistry and the downstream transport of materials and energy<sup>4</sup>.

### **III. Action to be completed by Council**

#### **F. EP 4 - Evaluate information from passage studies at other blockages and from previous assessments of passage at Grand Coulee and Chief Joseph dams.**

Proposed action: Council central staff will compile existing information from passage studies around the region and develop a report summarizing findings from these studies.

Rationale: As part of the Anadromous fish mitigation in blocked areas strategy in the Fish and Wildlife Program, a phased approach is described as part of a science-based, passed approach to investing the reintroduction of anadromous fish above Chief Joseph and Grand Coulee dams. Phase one describes several tasks including investigating habitat availability, suitability and salmon survival potential in this areas. The Council will consider an RFP to address this task at the October Council meeting. Another Phase one task is to evaluate existing information from fish passage studies and from previous assessments of passage at Grand Coulee and Chief Joseph dams. Staff, in

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<sup>4</sup> Main channel exchange with recirculating marginal waters, hyporheic exchange, bank storage and overbank flow onto floodplains are all included under a broad continuum of interactions known as "hydrologic exchange flows."

collaboration with others in the basin will compile existing information and develop a report summarizing the findings.

### ***Extended-term implementation actions***

In August the staff recommended that staff work begin on an open solicitation for the extended-term priorities after the immediate and near-term actions have been launched. Staff will bring forward a discussion regarding these actions in November. These actions will likely address emerging priorities 1, 3 and 5 and possibly others.

Table 1 (Draft). Potential actions to implement Fish and Wildlife Program priorities and their status (O = work is ongoing, ✓ = work is complete, D=to be discussed at upcoming meeting, U= under consideration by Committee or Council at this time. Some of these actions may have follow-on actions that would be considered in the future, not all are captured at this time.

Emerging Priority	Program language	Associated tasks	Council action	Implementation on timeframe (from August)	Status of Council action
EP 1	Provide for funding long term maintenance of the assets	O&M strategic plan: Hatchery Assessment	RFP for hatchery assessment	Immediate	✓
		O&M Strategic Plan: Screens	TBD	Near-term	O
EP 2	Developing program objectives as appropriate	O&M Strategic plan: Lands	TBD	Near-term	O
		Refine Program objectives	Compile existing, work with NOAA	Immediate & Near-term	O
EP 3	Prioritized research on critical uncertainties	Update Research Plan (RP)	ISAB evaluation ongoing	Near-term	O
		Take into account the effects of climate change	Complete water temperature analysis and modeling	Near-term	U
		Expanded management of predators	Convene a technical workgroup (to consider effectiveness, expansion of efforts, develop common metric)	Convene	Near-term
EP 4	Reintroduction, passage and habitat improvement if warranted	Aggressively address non-natives and invasive species	Assist states efforts to prevent establishment of quagga/zebra mussels	Letter to AA	✓, U
		Map and determine hotspots for contaminants	Support work by EPA's Columbia River Toxics Reduction Working Group	Letter to action agencies	Immediate
EP 5	Implement additional sturgeon and lamprey measures (passage and research)	Phase I-assess habitat	RFP decision pending	Immediate	U
		Phase I-evaluate passage studies at other blockages and from previous assessments	Staff will compile and develop report	Near-term	D
EP 6	Update plans most in need of updating	Solicit for sturgeon proposals	TBD	Extended-term	D
		Once the synthesis report is available, solicit for lamprey proposals	TBD	Extended-term	D
EP 7	Continue efforts to improve floodplain habitats	Hold discussions or workshop	Plan and convene workshop	Near-term	U
		Hold science policy forum (collaborate with other regional efforts)	Plan and convene forum	Near-term	U