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September 9, 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 discussed initially at the August Council meeting.

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

Background: 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 Council recognizes that the Program priorities are a subset of all of the measures in the Fish and Wildlife Program which has many priorities, most of which are being implemented and many have multi-year funding and implementation commitments. The Program emerging priorities represent important measures that were either not happening or not being implemented to a sufficient extent.

Through the Program the Council also provides the following guidance to Bonneville, the other federal agencies, and the region in general as to which of these new measures are emerging priorities (EP) for implementation in the next five years: “During the course of the next five years, the Council anticipates that Bonneville will take the necessary steps to integrate these priorities into the Program and will report annually to the Council on its progress.” The Program further notes that, “Bonneville should fund any new fish and wildlife obligations from identifying savings within the current Program and as necessary, from additional expenditures. ...To the extent that targeted savings are insufficient to meet Bonneville’s financial obligations in this Program, Bonneville should consider increasing expenditures.”

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).

Immediate implementation actions

The Committee will continue discussion of one immediate action in September: the staff recommendation to move forward with a *request for proposals* (RFP) for a habitat assessment per the Program’s emerging priority number four, investigate blocked area mitigation options. Also in September, the Council will consider the three immediate implementation actions recommended by the Committee: 1) Language for an email to be sent to EPA’s regional Toxics Reduction Work Group to seek their assistance in characterizing and mapping toxic contaminant “hot spots” in the Columbia River Basin (EP 3); 2) A draft letter requesting federal funding to assist the states in the protection of Columbia River waters and infrastructure from the introduction of dreissenid mussels (EP 3); and 3) A RFP for commencing immediate (FY 2016) implementation of a hatchery condition assessment (EP 1).

The RFP for the habitat reach assessment (EP 4), should the Committee and Council support its recommendation to Bonneville, calls for proposals that would receive funding in FY 2016 and 2017. Also, the hatchery condition assessment (EP 1), to be considered by the Council in September, could also extend into FY 2017 if necessary.

Near term implementation actions

The staff would like to call the Committee's attention to the *next* set of implementation opportunities related to the emerging Program priorities, the "near-term" (2017) opportunities.

This is a set of actions that is targeted for implementation in FY 2017, and was briefly presented in the August Committee packet memo. Some of the work may require explicit new funding and in those instances, the staff recommends operating under the targeted solicitation model, with variations depending on funding available and the level of specificity of defined work. The targeted solicitation process could commence in late fall of 2015. Staff seeks input from the Fish and Wildlife Committee on the following emerging priority actions for implementation in FY 2017. Note that EP# refers to the Program's "emerging priority number":

- a) *EP - Continue implementation of the Operations and Maintenance (O&M) strategic plan including completion of hatchery condition assessments for program hatcheries, and possible initiation of work related to fish screens. This is a continuation of efforts described under the "immediate" implementation actions.*

- b) *EP 2 – Initiate temperature analysis and modeling in the Grand Coulee to McNary reach of the Columbia River.*

One of the Council's emerging high priorities addresses "preserving program effectiveness by ... taking into account the effects of climate change." (See p. 116 of the Council's 2014 Fish and Wildlife Program.) This priority action was recommended by numerous state, tribal and regional entities during the 2013-14 program amendment process and subsequently adopted by the Council into the program.

Proposed near-term action – 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
- Snowpack will diminish, particularly in lower-elevation watersheds, and runoff timing will be altered
- Peak river flows will likely shift to earlier in the spring
- Water temperatures will continue to rise

These temperature and hydrologic changes are expected to have a variety of interrelated impacts on aquatic and terrestrial ecosystems in the Columbia River Basin.¹ 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.

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.² 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

¹ 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.

² 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.

all the pertinent streamflow and relevant ambient conditions and inputs for the system application and subsequent temperature modeling analysis.

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

One of the Council's emerging high priorities addresses "preserving program effectiveness by supporting expanded management of predators." (See p. 116 of the Council's 2014 Fish and Wildlife Program.) This priority action was recommended by numerous state, tribal and regional entities during the 2013-14 program amendment process and subsequently adopted by the Council into the program.

Proposed near-term action -- The federal action agencies, in cooperation with the Council, state and federal fish and wildlife agencies, tribes, mid-Columbia PUDs, and others, should convene a technical work group to: a) determine the effectiveness of predator management actions; and b) develop 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. Once 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 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 3 - Consider ongoing or additional assistance for states' efforts to prevent the establishment of quagga and zebra mussels. This is a continuation of efforts described under the "immediate" implementation actions.*

- e) *EP 3 – Expand pikeminnow removal to other mainstem dams.*

As discussed above, one of the Council's emerging high priorities addresses "preserving program effectiveness by supporting expanded management of predators." (See p. 116 of the Council's 2014 Fish and Wildlife Program.) This

priority action was recommended by numerous state, tribal and regional entities during the 2013-14 program amendment process and subsequently adopted by the Council into the program.

Proposed near-term action: BPA should continue to implement annually the base northern pikeminnow predator control program and expand pikeminnow (*Ptycholcheilus oregonensis*) removals to other mainstem dams in the lower Columbia River, e.g., expand the program to include northern pikeminnow removals at McNary and Bonneville dams. In addition, the action agencies should continue to annually evaluate the effectiveness of the pikeminnow exploitation rates and the resultant reductions in salmon predation. The annual evaluation should also include focused pikeminnow removals for these expanded efforts at mainstem dams and such removals would continue, as warranted.

Rationale: The construction and operation of the Columbia River hydrosystem has altered historical habitats and created reservoir habitats more suitable for some native (and non-native) fish predators, such as northern pikeminnow. Juvenile salmonids that become stressed or disoriented after passing mainstem hydroelectric dams become easy prey for northern pikeminnow in dam tailraces. The ongoing northern pikeminnow angler reward program has been successful in reducing prey rates on native salmonids. However, public access in boat restricted zones at mainstem hydroelectric projects, particularly in dam tailrace areas, is infeasible and unsafe. Thus, the predator control program's dam angling effort by contracted fishers should be expanded in all tailraces where elevated northern pikeminnow predation rates are known to occur.

f) *EP 3 – Initiate toxics mapping and hotspot determination project.*

In September, the Council will consider sending an email to the toxics reductions task for assistance with scoping the effort to map toxic hotspots. This would be the next step in implementation of the hotspot mapping effort.

g) *EP 4 – Continue with addressing Phase 1: a habitat assessment, an evaluation of information from passage studies at other blockages and from previous assessments of passage at Grand Coulee and Chief Joseph dams.*

h) The Committee will discuss a staff recommendation to forward the draft request for proposals to the full Council for discussion at the September meeting. The RFP proposes that the work be implemented in FY 2016 and FY 2017 so the staff is reflecting on this list, the work that would continue in FY 2017. *This is a continuation of efforts described under the "immediate" implementation actions.*

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

One of the Council's emerging high priorities is to update the subbasins plans most in need of updating. This priority action was recommended by many of the agencies, tribes and recovery boards, in particular to incorporate ESA recovery and other important plans into the subbasin plans. Extensive subbasin plan updates were recommended for areas that had drastic change, such as the removal of a dam or other major physical change to a subbasin.

Proposed near-term 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 a future regional coordination meeting to gather some input from the regional coordination entities.

Rationale:

The Fish and Wildlife Program includes a description of the history, use³ 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. 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."

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

One of the Council's emerging high priorities is to continue to improve a river's connectivity to floodplain habitats. This priority was recommended by several entities during the amendment process, specifically to continue work to enhance floodplain function.

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

Proposed near-term 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 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 suggests that this topic be added to the agenda of a future regional coordination meeting to gather some input on this issue from the regional coordination entities.

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 energy⁴.

⁴ 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.”