# Appendix 1
# Obama Administration
# Review & Court Guidance

**September 11, 2009**

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# Appendix 1

The purpose of this appendix is to detail the nature of the Obama administration's efforts to fully understand the 2008 FCRPS Biological Opinion (2008 BiOp; NMFS 2008), its underlying science and litigation issues, and to discuss the manner and extent that implementing the 2008 BiOp through the AMIP addresses the suggestions made by the Court in its May 18 letter to counsel.

## Obama Administration Review

As noted in the AMIP, the Court has allowed the administration of President Obama time to more fully understand the 2008 BiOp. During the time allowed, the new administration leadership – represented by NOAA Administrator Dr. Jane Lubchenco for the Department of Commerce; Council on Environmental Quality Chair, Nancy Sutley for the White House; Principal Deputy Assistant Secretary of the Army, Terrence "Rock" Salt for the Department of Defense; Associate Deputy Secretary, Laura Davis for the Department of the Interior; and Bonneville Power Administration Administrator Steve Wright for the Department of Energy – engaged in a process involving a substantial and thorough consideration of the 2008 BiOp, the available science on which it is based, and issues raised by litigants and highlighted in Judge Redden's May 18, 2009 letter.

After NOAA and each of the Action Agencies provided briefings for their respective new leadership, they organized two days of meetings, May 26 and 27, 2009, in the region to enable the Administration to understand the 2008 BiOp, the scientific basis for the 2008 BiOp, and the perspectives of the affected states and Indian Tribes.

On May 26, 2009, two listening sessions were held for Administration principals in Portland, Oregon. One session invited regional technical personnel, many of whom participated in the development of the BiOp's RPA, served on recovery planning technical teams or otherwise had expertise with technical issues relevant to the BiOp. They included biologists from the affected states, a biologist with the Columbia River Inter-Tribal Fish Commission, and scientists from the Technical Recovery Teams and Independent Science Advisory Board [Exhibit A, Session 1]. To encourage a broad discussion in this session, six questions were provided in advance to the participants covering key topics [Exhibit B]. These participants were asked to provide their individual views in answering one or more of these questions. The session lasted three and a half hours.

At the second listening session, in the afternoon of May 26, representatives of four Pacific Northwest states and eight Indian Tribes participated in a three-hour session [Exhibit A, Session 2]. These representatives were invited to provide an understanding of their interests in the 2008 BiOp from a policy perspective. A facilitator, familiar with the issues, was hired by NOAA Fisheries to guide the presentations and discussions in both sessions.

On May 27, the new administration principals spent the morning at Lower Monumental and Ice Harbor dams, where they received a tour and briefings on dam operations by the Corps of Engineers and NOAA Fisheries, including an opportunity to inspect a Removable Spillway Weir (RSW) and fish passage and research facilities.

Also on May 27, in Seattle, Dr. Lubchenco and the NWFSC hosted a series of conference calls with highly respected independent and agency scientists [Exhibit A, Session 3] inviting their individual views relative to the six questions that were the focus of the first session [Exhibit B]. This session lasted an hour and a half and included past and present members of the ISAB and the Recovery Science Review Panel.

On June 25, 2009, the Department of Justice convened sessions in Washington, D.C. Dr. Lubchenco, Laura Davis and representatives from the Council on Environmental Quality and the Department of the Army heard from the National Wildlife Federation coalition of plaintiffs and, later that day, from the various defendant interveners in the litigation [Exhibit A, Sessions 4 & 5]. These listening sessions lasted a combined total of three hours.

Following the three listening sessions on May 26 and 27, Dr. Lubchenco and the other federal executives decided it would be helpful in their efforts to fully understand the 2008 BiOp to convene a workshop of some of these same independent expert scientists. In mid-June, NOAA invited these scientists [Exhibit A, FCRPS Science Workshop] to a two day workshop on July 7 and 8, 2009, in Washington, D.C., and provided them the 2008 BiOp and supporting papers and analyses used in its development (all contained in the administrative record) for their consideration in advance [Exhibit C]. At the opening of the workshop, the scientists were asked to focus their attention on the science underlying the BiOp in five areas: the quality of the scientific analysis, the effectiveness of RPA actions, the effectiveness of measures used to monitor the species' status, the adequacy of the contingency measures, and the adequacy of the analysis of climate change impacts on the species. The workshop then proceeded with presentations by NOAA Fisheries of the work underlying recovery planning and the specific analyses used in the 2008 BiOp, followed by discussion time among the independent scientists on the five areas identified. At the end of the workshop, Dr. Lubchenco, Mr. Salt, Ms. Davis and a CEQ representative, as well as the staffs of NOAA Fisheries and the Action Agencies developing this plan, heard these scientists' individual views in a one and a half hour session on July 8, 2009.

With a more complete understanding of the 2008 BiOp as a result of these efforts, the Administration determined that while the science underlying the 2008 BiOp is fundamentally sound, there are uncertainties in some of the predictions regarding the future condition of the listed species. Further contributing to these uncertainties is the Administration's understanding about how climate change may affect these species and their habitat. The Administration also identified the need to better understand the impact of invasive species and predators on the listed species, as well as the interactions among the listed species. In light of these uncertainties, the Administration determined that these issues would be addressed by accelerating and enhancing

existing RPA mitigation actions; collecting more data and improving analytic tools to better inform future adaptive management decision-making; and adding new biological triggers that when tripped will activate near- and long-term contingency actions, should the agencies detect a significant decline in the species' condition. The Administration consequently directed the development of the AMIP to address these issues, taking a more precautionary approach in implementing the RPA through the adaptive management provisions in the 2008 BiOp.

As the broad outlines of the AMIP developed, the agencies, primarily through NOAA Fisheries and the Department of Justice, conducted individual briefings for defendant intervenors (the States of Washington, Idaho and Montana, Lower River Tribes (the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Confederated Tribes and Bands of the Yakama Nation), the Confederated Tribes of the Colville Reservation, the Kootenai Tribe of Idaho, the Confederated Salish and Kootenai Tribes and the Northwest River Partners and other energy and river user entities); for Amicus Spokane Tribe of Indians; and for the plaintiff parties (State of Oregon, the Nez Perce Tribe and the National Wildlife Federation coalition of environmental and sports fishing groups). The purpose of these briefings was to discuss and explain the Administration's process and position on the 2008 BiOp with, and seek input from, all parties prior to finalizing and presenting its position to the Court. For each of these briefings, the need for a more precautionary approach to BiOp implementation for the species' benefit and the elements of the AMIP (RM&E, triggers, immediate and long term contingency actions, and measures occurring immediately) were described and input was sought from the parties.

## Court Guidance: May 18, 2009, Letter

In the course of its review, as described above, the Obama Administration has carefully considered the Court's suggestions in its letter to the parties of May 18, 2009. Judge Redden observed, and the United States agrees, "that the concept of 'adaptive management' is flexible enough to allow us to implement additional and/or modified mitigation actions within the structure of the existing BiOp." In particular, the Court urged (at pp. 2-3) that consideration be given to implementing the following measures as part of the BiOp's adaptive management process:

- Committing additional funds to estuary and tributary habitat mitigation and evaluation

- Identifying specific tributary and estuary habitat improvement projects beyond December 2009

- Developing a contingency plan to study specific, alternative hydro actions, such as flow augmentation and/or reservoir draw downs, as well as what it would take to breach the lower Snake River dams if all other measures fail

- Committing additional flow to both the Columbia and Snake rivers

- Continuing ISAB's recommended spring and summer spill operations throughout the life of the BiOp

- Providing periodic reports to the Court, and allowing for independent scientific oversight of the tributary and estuary habitat mitigation actions

The AMIP responds to a number of the suggestions in the Court's letter and concerns raised by the parties, including providing for ongoing independent scientific review, monitoring to address certainty of biological benefits, and the development of new biological triggers for contingency actions to be taken and more robust near and long-term contingency actions. Details are provided in the sections below and presented in the order of the above bullets. This Appendix also provides additional responses to the Court's questions regarding habitat and hydro actions that are called for by the RPA.

## 1. Estuary & Tributary Habitat Projects

In response to the Court's concerns and the Administration's review process, and through RPA implementation, the Action Agencies have: (1) negotiated and will execute in September 2009, the Estuary MOA with the State of Washington; (2) identified specific habitat projects for implementation after 2009; (3) committed substantial funding for implementation of habitat projects; (4) identified specific habitat implementation partners; and (5) identified specific points of scientific review during habitat project selection. Together, these actions increase the certainty that habitat actions will have the intended benefits for ESA-listed salmon and steelhead. In addition, the AMIP incorporates a precautionary approach to implementation for the species benefit, ensuring that Rapid Response Actions will be taken in the event that the effects of the RPA are less than estimated.

The Administration has reviewed the methods used to estimate survival benefits from habitat projects and believes they are sound and retain the needed flexibility to respond to evolving scientific data, as well as to implementation challenges and opportunities. In its review of the Court's concern regarding the method used to estimate benefits for habitat projects in the estuary, the Administration particularly considered how the views of the NWFSC were addressed. The Administration does not believe the views of NWFSC were ignored, and concludes that the methodology is based upon the best available scientific data, recognizing that quantitative data are currently limited. The Administration has concluded that the best means for addressing this uncertainty is not to disregard habitat improvement opportunities, but rather through improved RM&E to reduce this uncertainty and more robust contingency planning, which are described in detail in the AMIP.

The Action Agencies have committed a significant amount of funding to estuary and tributary habitat projects to fulfill their obligations under the 2008 BiOp, roughly doubling that under the 2000 BiOp. The Action Agencies have added to this increased funding through adoption of the Columbia Basin Fish Accords, in which they commit over $900 million during the 2008-2017 period, the majority of which is dedicated to ESA-listed salmon and steelhead affected by the FCRPS. In addition, after hearing the Court's concerns expressed at the March 6, 2009, status hearing, the Action Agencies negotiated with the State of Washington to secure the Estuary MOA, adding an additional $40.5 million to support implementation of on-the-ground estuary habitat projects. These commitments yield certainty with respect to implementation both from a funding standpoint and in the identification of projects (in the case of the Columbia Basin Fish Accords and the Estuary MOA, through 2018). The project selection process for 2008 BiOp implementation (which includes scientific scrutiny of all projects, including those specified in the Accords and the Estuary MOA) is designed to ensure that the best available science is used to determine the biological value of habitat improvements to salmon and steelhead.

***Estuary Habitat – Funding Sources***

The Action Agencies fund habitat actions in the estuary through three sources:

(1) The Estuary MOA provides $40.5 million for on-the-ground habitat actions. Through this Agreement, 21 new projects have been identified for implementation through 2018 (see Appendix 3 to AMIP).

(2) In addition to the Estuary MOA, BPA is funding $35 million ($3.5 million annually) in on-the-ground estuary habitat projects through 2018 for 2008 BiOp implementation through the NPCC Fish and Wildlife Program.

(3) The Corps funds estuary habitat projects through its various authorities. In addition to the Estuary MOA, the Corps anticipates funding approximately $2 million per year in on-the-ground estuary habitat projects through 2018.

Based on the funding described above, the estuary commitments in the 2008 BiOp are reasonably certain to occur.

***Estuary Habitat – Project Selection & Science Review***

Project selection in the estuary occurs in three ways, each of which incorporates rigorous independent scientific review and information gathered through ongoing research, monitoring and evaluation to refine project selection. The Corps' and BPA's identification and selection of habitat restoration projects are linked to a growing body of estuarine science being developed by the NWFSC, Corps, University of Washington, Pacific Northwest National Laboratories and the states of Washington and Oregon, among others (Attachment 1 – BPA and Corps Funded Estuary Habitat Projects 2007-2009).

(1) The Washington Department of Fish and Wildlife (WDFW) has made a preliminary assessment of the Estuary MOA's projects for biological benefit using the method specified in the 2008 BiOp. As these projects are designed and prior to implementation, they will be submitted to the NPCC's ISRP for a thorough independent science review. In addition, each project will be assessed by a regional expert technical group (expert panel) assembled in accordance with RPA Action 37 to determine associated biological benefits.

(2) BPA selects projects through the Columbia Basin Fish and Wildlife Program using both the ISRP's independent science review and the RPA Action 37 expert panel process for assessing scientific rigor and associated biological benefits. These processes incorporate results of ongoing RM&E. BPA is currently conducting review processes with these entities for projects to be implemented in the 2010–2012 period (see Attachment 2 – Estuary Habitat Projects 2010-2012).

(3) The Corps selects projects through its Section 536 WRDA 2000 program, targeting ecosystem restoration in the estuary. This program requires a cost sharing partner, which provides a 35% cost-share match (although projects on federal lands are 100% federally funded). Project selection includes coordination through the Lower Columbia River Estuary Partnership science workgroup. In accordance with RPA Action 37, a regional expert technical group assesses specific project biological benefits. Furthermore, Corps policy requires the development of a feasibility report that addresses expected benefits and all actions will comply with National Environmental Policy Act (NEPA) and the ESA.

***Estuary Habitat Benefit Assessment – Method & Verification of Benefits***

The Court expressed concern regarding the method used to estimate benefits for habitat projects in the estuary and in particular how the view of the NWFSC was considered in development and application of the benefits assessment method for estuary habitat action.

The Administration evaluated the concern about the method used to estimate benefits, as previously explained in (Kratz 2007). NOAA Fisheries reasoned that the years 2000-2006 were the developmental phase for estuary restoration. The early projects did not have the benefit of the increase in knowledge that occurred as more and more projects were implemented. Based on this learning curve, both the selection process and project criteria for the estuary projects were revised, resulting in higher standards that now guide estuary habitat project development and implementation. Because future projects will be selected using the improved habitat selection criteria and strategies that were used for the 2007-2009 projects, NOAA Fisheries is confident that they will yield greater habitat benefits for salmon than did the first projects in the 2000-2006 period the "best available scientific information" will inform the assessment of projects under the 2008 BiOp. NOAA Fisheries and the Action Agencies determined that the projects implemented for the RPA will be more like the 2007-2009 projects and therefore achievement of survival improvements committed to over the ten year implementation of the RPA is reasonable. This is especially true because NOAA Fisheries anticipates that the best available science will continue to improve because additional data will be collected via ongoing RM&E. This will continue to improve the quality and effectiveness of the projects.

The Administration also evaluated the concern expressed by the Court that NOAA's "…own scientists have concluded that many of the proposed estuary mitigation measures (and the assumed benefits) are unsupported by scientific literature." While the NWFSC did initially send a memorandum to NOAA Fisheries critiquing the element of the Lower Columbia River Recovery Plan that is known as the draft "estuary module," a distinction should be made between that critique and the benefits methodology that was under development through the court-ordered regional collaboration process. The NWFSC enlisted the help of the ISAB to review the estuary module. In that review, the ISAB commented that the estuary module should not be couched as a "scientific document" because it did not rely on primary literature sources. The module was instead a synthesis of the best available science incorporating three secondary sources of information (each of which contained primary literature sources). This term of art "scientific

document" refers to the nature of the source cited, but has been understandably misinterpreted by many to be a criticism of the scientific validity of the module. As NOAA Fisheries' estuary module nears completion this fall, the drafters have received comments from not only the ISAB, but also the State of Oregon, the Columbia River Inter-Tribal fish Commission, the City of Portland and the public. All of these comments will be incorporated or addressed in the final module.

The NWFSC has assisted in the development of the program to assess habitat benefits for estuary actions through the expert panel convened in accordance with RPA Action 37. Acknowledging that a variety of methods could be used to assess benefits, the NWFSC is actively engaged, with the Action Agencies and other regional parties, in applying the method adopted in the 2008 BiOp refined by RM&E results. RPA Action 37 anticipates this refinement – "FCRPS RM&E results will actively inform the relationship between actions, estuary habitat change and salmon productivity and new scientific information will be applied to estimate benefits for future implementation." NOAA Fisheries and the Action Agencies value the NWFSC's involvement to ensure this program is guided by sound science.

The Action Agencies have been funding research in the lower Columbia River and estuary to better understand the use of, and potential benefits to, juvenile salmon from different types of shallow water habitats. This research is designed to assess specific benefits from individual restoration sites and the cumulative response of the ecosystem as a whole to multiple individual restoration projects. The agencies have also been studying the effects of different biological and physical parameters (temperature, salinity, nutrients, prey species, predators, etc.) within the estuary and plume on juvenile salmon migration timing and survival and associated adult return rates. The intent of RM&E efforts in the estuary is to provide data and information to evaluate progress toward meeting program goals and objectives and support decision-making in the estuary for actions being taken by the Action Agencies and regional partners. An adaptive management process will be used to identify RM&E efforts and habitat actions. RPA Action 37 establishes an expert regional technical group to support and guide these actions. This process will ensure that the methodology to select future projects, and estimate benefits will incorporate the best available data.

***Tributary Habitat – Funding Sources & Project Selection***

The Action Agencies provide significant funding and technical assistance to implement tributary habitat improvement actions. There are three sources of Action Agency funding for habitat actions in the tributaries:

(1) BPA provides tributary habitat funding through the Columbia Basin Fish Accords (Accords) to support and enhance the actions identified in the 2008 BiOp. The tribal Accords also acknowledge the Action Agency's trust and treaty relationships with the tribes. The Accords commit over $900 million over the 2008-2017 period, a significant portion of which is dedicated to projects that improve the quality of tributary habitat used by ESA listed salmon

and steelhead. Habitat projects have been identified and implementation partners secured by the Accord parties through 2017.

(2) BPA also provides funding through the Columbia Basin Fish and Wildlife Program to support the 2008 BiOp tributary habitat commitments. BPA now budgets more than $40 million annually for projects that improve the quality of tributary habitat used by ESA listed salmon and steelhead. It should be noted that there is overlap in funding between the Fish and Wildlife Program and the Columbia Basin Fish Accords.

(3) Reclamation currently invests more than $6 million per year in technical assistance through partnerships that contribute to on-the-ground habitat improvement projects. Additionally, Reclamation received $1.9 million under the American Recovery and Reinvestment Act for 2008 RPA habitat improvement projects.

In addition to the Action Agencies' extensive tributary habitat program, there are a number of other significant federally funded habitat programs that benefit listed salmon and steelhead and assist in recovery of the species. For example, NOAA Fisheries oversees the Pacific Coastal Salmon Recovery Fund (PCSRF), which during 2007 and 2008 contributed over $9.5 and $8.7 million, respectively, toward habitat protection and restoration in the Columbia Basin. Expenditures of over $11 million are expected for the 2009 funding cycle (see Attachment 3, PCSRF Funding). The USFWS contributed over $2.2 million during 2007-2009 for Columbia River Basin habitat conservation projects (see Attachment 4, FWS Columbia River Basin Habitat Conservation Funding).

The Action Agencies are actively implementing the extensive program of tributary habitat actions called for in the 2008 RPA. Projects for the 2007-2009 implementation cycle that were specifically identified in the 2007 BA are now either completed, being implemented, or being replaced by more feasible projects (see Attachment 5, BPA Funded Tributary Habitat Projects 2007-2009, and Attachment 6, Reclamation Technical Assistance for Tributary Habitat Projects 2007-2009).

***Tributary Habitat – Project Selection & Scientific Review***

Tributary habitat projects slated for implementation after 2009 have also been identified. Project selection in the tributaries occurs in three ways, each of which incorporates independent scientific review and information gathered through ongoing research, monitoring and evaluation.

(1) Consistent with RPA Action 35, the Action Agencies regularly convene expert panels comprised of state, tribal and federal specialists familiar with local habitat condition. The expert panels identify specific habitat actions to be implemented or available for implementation, evaluate the limiting factors addressed, and estimate the associated habitat improvements.

In 2009 these panels were convened for the populations listed in bold type in RPA Action 35, Table 5. The panels evaluated the habitat improvements estimated from 2007-2009 implementation and estimated habitat improvements from projects identified for 2010-2012 implementation. The information from these panels is being assessed and will inform the Action Agencies' 2010-2012 habitat implementation funding decisions (Attachment 7). Consistent with RPA Action 35, the expert panels will be reconvened in 3-year cycles to identify projects for each remaining implementation period of the BiOp. BPA funded projects either have or will undergo scientific review by the ISRP (Attachment 8, BPA funded Tributary Habitat Projects 2010-2012).

(2) Tributary habitat actions funded under the Accords are linked to biological benefits based on limiting factors for ESA-listed fish, consistent with recovery plans and subbasin plans. In the areas where habitat expert panels are convened, the habitat projects advanced under the Accords will be reviewed by these panels to confirm habitat improvements and survival estimates. These projects will also undergo scientific review by the ISRP (Attachment 9, BPA Funded Tributary Habitat Projects 2013-2017).

Most actions implemented with Reclamation technical assistance (Attachment 10, Reclamation Technical Assistance for Tributary Habitat Projects 2010-2012) also receive funding from BPA and therefore undergo ISRP review. Reclamation also provides technical assistance for a small number of actions that receive implementation funding from other sources. Actions funded through the Washington Salmon Recovery Funding Board receive scientific review from the Upper Columbia Salmon Recovery Board Regional Technical Team. Actions funded through the Idaho Office of Species Conservation receive scientific review through the Pacific Coast Salmon Recovery Fund implementation program.

The independent science reviews and assessments common to all of these project selection processes are designed to ensure that the most knowledgeable experts are reviewing potential projects for their the biological value to salmon and steelhead and incorporating the results of RM&E in that process. These RM&E activities, implemented under the 2008 RPA Actions 56 & 57, involve status and trend monitoring to improve the general understanding of productivity and abundance for specific salmon and steelhead populations, and effectiveness monitoring to better quantify improvements in habitat quality and the survival of salmon and steelhead populations from tributary habitat projects. For example, specific scientific investigations in six tributary subbasins, called Intensively Monitored Watersheds (IMWs), aim to contribute empirical information that ultimately can be used to inform the tributary habitat survival estimates developed through the collaboration process.

***Tributary Habitat Benefit Assessment – Method & Verification of Benefits***

The Court expressed concern regarding the method used to assign benefits to tributary habitat actions. A component of this concern was that habitat projects beyond 2009 had not been identified. As noted above, local experts have identified actions to improve tributary fish habitat

that could be implemented in the 2010-2012 time period. The Columbia Basin Fish Accords also identified tributary habitat actions for implementation through the term of the 2008 BiOp. While these actions may be refined and modified prior to actual implementation, it is clear that specific tributary habitat projects are identified and available for implementation beyond 2009 consistent with RPA Action 35. These actions will be identified in the 2010-2012 Implementation Plan.

With respect to the method developed through the regional collaboration to assess benefits of tributary habitat actions, the majority of tribal, state, and federal scientists involved in the collaboration support the method adopted in the 2008 BiOp. The Action Agencies' Comprehensive Analysis, in Appendix C,[1] and Section 7.2.2 in the 2008 BiOp, provide a comprehensive overview of the analysis used to estimate habitat improvement and survival benefits.[2] The benefits assigned to tributary habitat improvements are reasonable because they are based on expert judgment informed by scientific data and because the benefits are specific to the project, population and limiting factors being addressed (and therefore are not arbitrary).

Although there is some uncertainty in assigning habitat improvement project benefits, the best available science indicates that habitat improvements will benefit salmon. Over the last decade, many books on salmon conservation have emerged,[3] and all agree that habitat restoration should be a cornerstone of any recovery program.[4] The collaboration habitat group also realized that the best available scientific information is held by local biologists, who have the best understanding of local watershed processes, habitat conditions, limiting factors, and restoration/rehabilitation plans for their respective areas. Many of the local biologists who participate in providing information in the remand collaboration are part of the expert panel review and selection process. In addition, in order to submit successful proposals for Action Agency funding, biologists need to identify and describe the condition of the limiting habitat factors they intend to improve. They must also estimate the potential benefits associated with their proposed action. It is clear, then, that much scientific data, knowledge, and experience have informed, and continue to inform, the tributary habitat benefit estimates.

RPA Action 35, Table 5 displays the tributary habitat performance requirements for which the Action Agencies are responsible; these are essentially "survival improvement" performance standards because of the way the benefits were calculated. The Collaboration Habitat Group agreed to base the habitat benefit methodology on an egg-to-smolt survival relationship associated with specific changes in habitat condition as a reasonable way (to be refined by future RM&E) to value the benefit of tributary habitat actions for salmon and steelhead. There are studies reported in the scientific literature that show habitat benefits are associated with habitat restoration/rehabilitation actions, and in some cases these have detected increasing local fish

[1] CA August 2007, Action Agencies Comprehensive Analysis
[2] Kratz 2007, at 5, pg 3
[3] For example, National Research Council (1996); Stouder et al. 1997; Lichatowich 1999; Knudsen et al. 2000; Lynch et al. 2002; Montgomery et al. 2003; Wissmar and Bisson 2003
[4] Corps et al. 2007, Action Agencies Comprehensive Analysis, pc-1-17

abundance.[5] However, there is very little published information that demonstrates the effects of site-specific habitat actions on egg-to-smolt survival at the population scale. Paulsen and Fisher (2005) found that larger numbers of habitat rehabilitation actions were associated with higher parr-to-smolt survival of endangered wild Snake River spring/summer Chinook populations. The same authors extended their analyses through the adult stage and found that smolt-to-adult survival was also higher in these populations.[6] These studies demonstrate that it is possible to improve survival at the population scale with the implementation of habitat rehabilitation actions and therefore these performance requirements are reasonable.

Finally, two separate activities help address the inherent uncertainties associated with tributary habitat benefits. The first is that, though adaptive management, new information available from RM&E (particularly from the Intensively Monitored Watersheds), recovery plans, the scientific literature, and other sources will inform future tributary habitat project benefit estimates (see RPA Actions 35, 56, and 57). The second is that the AMIP includes contingencies in the event that salmon adult abundance does not respond as estimated by the 2008 BiOp, which includes the habitat benefits.

## 2. Contingency Plans

The Administration agrees that further definition and clarification of the adaptive management plan incorporated into the 2008 RPA is warranted and has spent considerable time enhancing and strengthening the plan that is presented in the AMIP.

The Court has inquired whether implementation of the 2008 RPA would include enhanced contingency plans "to study specific, alternative hydro actions, such as flow augmentation and/or reservoir drawdowns, as well as what it will take to breach the lower Snake River dams if all other measures fail." Although great care has been taken in developing these contingency plans, the Administration believes it is highly unlikely they will be needed as the analysis in the 2008 BiOp is sound. Improving averages of adult returns are consistent with these findings. Therefore, the Administration disagrees that certain stocks "are on the brink of extinction." However, the Administration does share some of the Court's concerns, acknowledging the need to implement the RPA in a precautionary manner due to uncertainty and to protect the species in the event of unexpected significant declines. The Administration therefore has directed NOAA Fisheries and the Action Agencies to develop the AMIP to provide further definition and specificity to the adaptive management provisions of the RPA.

The adaptive management provisions incorporated into the RPA were an outgrowth of the remand collaboration process directed by the Court. The provisions provide accountability for results in a number of ways: specific hydro and habitat performance standards, an extensive research and monitoring program, a transparent process for annual progress reporting to the

[5] For example, Bayley (2002); Roni et al. (2008)
[6] Paulsen and Fisher, in review

region, and full involvement of the sovereigns' RIOG. It also includes a contingency plan process to address significant declines in the abundance trends or productivity of listed fish. Expanded and enhanced in the AMIP, the contingency plan includes biological triggers at the species level and an "All-H Diagnosis" to determine appropriate contingency actions.

The AMIP includes the following key elements:

- **Biological Triggers:** The adaptive management provisions in the 2007 BA and incorporated into the RPA established contingency planning if fish abundance and productivity were to be decreasing at the time of the 2013 and 2016 Comprehensive Evaluations. As described in the 2007 BA, decreasing abundance in 30 to 50% of a species' populations (as indicated by evaluations of recruits per spawner (R/S), lambda, etc. as part of the evaluation of productivity, biological, and environmental metrics), would initiate an All-H diagnosis to address the appropriate limiting factors.

  The AMIP expands the biological triggers to be sensitive to 1) significant declines in adult abundance at any time over the term of the 2008 BiOp and RPA; and, 2) natural disasters in combination with preliminary abundance indicators. A Significant Decline trigger has been added that would result in implementation of Rapid Response Actions. In addition, an early warning of such a future fish decline would trigger closer scrutiny of the available scientific information to determine whether the species in question is likely to decline to a level that would trip the Significant Decline Trigger in one to two years. Early Warnings might occur through a combination of fish status and natural disasters, such as forest fires and volcanic eruption. If the decline is projected to be of sufficient magnitude, Early Warning triggers may result in implementation of appropriate Rapid Response Actions.

- **Rapid Response Actions:** Potential Rapid Response Actions identified in the AMIP include actions that could be implemented immediately (within less than 12 months) in the event that the Significant Decline Trigger is tripped. A study plan and implementation milestones for each Rapid Response Action will be developed by December 2011. Rapid Response Actions will be targeted to the species/MPG/population of concern.

- **Long-Term Contingency Actions**: A menu of potential Long-term Contingency Actions has been identified, which will be refined over time with RIOG. A study plan with implementation milestones for each Long-term Contingency Action will be developed by December 2011. These are items that would take more than 12 months to implement, and that would be implemented in the event that Rapid Response actions prove insufficient.

The Court specifically singled out breaching of the lower Snake River dams as a potential contingency and asked "what it will take to breach the lower Snake River dams if all other measures fail." One Long-term Contingency Action in the event there is a significant decline in the status of Snake River species, is a science driven study of breaching lower Snake River Dam(s). This is considered a contingency of last resort and would be recommended to Congress

only when scientific information indicates dam breaching would be effective, and is necessary to avoid jeopardizing the continued existence of the affected Snake River species, taking into account the short-term and long-term impacts of such action. Additionally, studying lower Snake River dam breaching will also have to consider the federal government's Treaty and Trust responsibilities to Indian Tribes, and compliance with other statutory and regulatory requirements.

It is reasonable to study breaching of lower Snake River dam(s) as a contingency of last resort because the status of the Snake River species is improving and the 2008 BiOp analysis concluded that breaching is not necessary to avoid jeopardy. Because breaching lower Snake River dams would have significant effects on local communities, the broader region and the environment. It would require a major investment of resources and time. Therefore, any decision to seek the requisite congressional authority must be driven by the "best available scientific information."

The Action Agencies and NOAA Fisheries are including the study of lower Snake River dam breaching as a potential Long-term Contingency Action if the scientific information indicates it is warranted. As noted above, the best available science does not support moving forward with breaching lower Snake River dams at this time. Additionally, the Administration's review of the 2008 BiOp noted uncertainty about the short-term negative biological effects of lower Snake River dam breaching (e.g., construction, sediment, contaminants) that may compromise the estimated long-term benefits. This and other uncertainties would need to be better understood if a biological trigger is tripped for a Snake River species.

The federal agencies also recognize that there may be conditions, such as global climate change and its effects on regional climate conditions and potential effects on the life cycle of salmon, that are not yet well understood. To address conditions that may occur in the future, the Action Agencies and NOAA Fisheries believe including the study of lower Snake River dam breaching as a potential Long-term Contingency Action, if a biological trigger is tripped, is consistent with the more precautionary approach adopted in this AMIP.

The Action Agencies and NOAA Fisheries will take the following actions:

1) By March 2010, the Corps in coordination with NOAA Fisheries and the other Action Agencies will complete a "Study Plan" for breaching of lower Snake River dams. The Study Plan will detail the scope, schedule and budget to conduct and complete technical studies and decision-making process, including the following:

    - Aquatic ecosystem effects (e.g., resident fish, biological analysis of anadromous fish using results from life-cycle model analyses, potential changes in hatchery and habitat programs, and other additional relevant technical evaluations)

    - Socio-economic effects (e.g., hydropower replacement, navigation, recreation, etc.)

- Other environmental effects (sediment, water quality, air quality, etc.)

- Additional engineering analysis (e.g., rock source explorations for rip-rap, and additional modeling of the by-pass channel)

2) By December 2012 NOAA Fisheries, in coordination with the Action Agencies, will develop the component of the life-cycle model (AMIP Section III.A, "Enhanced Life-cycle Monitoring for Evaluation of Contingencies") for evaluation of the short-term, transitional and long-term biological effects of dam breaching. This model will use existing and new data collected through the enhanced research, monitoring and evaluation described in the AMIP.

3) If the Significant Decline trigger is tripped for a Snake River species, dam breaching technical studies identified in the Study Plan would be initiated by the Corps if one of these three conditions applies: (1) an All-H analysis, including life-cycle modeling results, identifies lower Snake River dam breaching as necessary to address and alleviate the biological trigger conditions for the applicable Snake River species; (b) the analysis is sufficiently inconclusive to identify what actions are necessary to address and alleviate the biological trigger conditions for the applicable Snake River species; or (c) the analysis is not completed within six months of the biological trigger being tripped, with a completion goal of four months.

   The technical studies, including appropriate independent technical review, would be completed by the Corps in two years of one of these three conditions being met. The information from these studies, along with the results of the life-cycle modeling, would be used by the Administration (through the Salmon Policy Team) to make a decision whether the Corps should move forward with an overall evaluation study and NEPA documentation. If it is decided to proceed with this overall evaluation study/NEPA documentation, they would be initiated within two years after the initiation of the technical studies. This overall evaluation study/NEPA documentation would be used for the public decision making process to determine whether to seek congressional authority to undertake dam breaching, and it is estimated that this overall evaluation study/NEPA documentation (including the public decision making process) would take from two to three years to complete.

4) If, after the Corps has initiated the technical studies, an All-H analysis is completed that concludes that lower Snake River dam breaching is not necessary to address and alleviate the biological trigger conditions for the applicable Snake River species, the Corps, with the concurrence of NOAA Fisheries and the other Action Agencies, may terminate the technical studies at that time.

## 3. Additional Flow

The Court has inquired whether the Action Agencies could, through adaptive management, commit additional flow to both the Columbia and the Snake rivers. The Administration supports the flow provisions of the 2008 RPA and believes they are adequate to protect listed species. The flow regime developed in the 2008 RPA reflects a system constrained by limited storage that must be managed on a yearly basis taking into account that year's forecasted water supply. The 2008 RPA does commit the Action Agencies to undertake actions under their control to maximize the limited storage capacities for the benefit of listed fish, including optimizing U.S. storage project operations, developing dry year strategies to lessen the impact of any low runoff years on ESA-listed fish, improving volume forecasting and reliability, and addressing potential climate change impacts. The RPA recognizes that operations need to be tailored in-season to best use that year's water and fish conditions and that considerable flow augmentation is secured annually to improve juvenile salmon passage. Adaptively managing operations to use storage projects to provide cooler water temperatures addresses the most pressing concern during the summer migration season.

The commitment in the 2008 RPA (Action 4) is to manage the Columbia Basin's limited storage capacity to benefit fish survival. Key actions being taken under the 2008 BiOp to provide flows for listed fish include:

***Upper Snake Flows***

In accordance with the 2008 Upper Snake BiOp, Reclamation provides up to 487 kaf (thousand acre-feet) from the upper Snake River above Lower Granite Dam. The Nez Perce Settlement specifies that water will be provided from willing sellers and in accordance with State water law. Reclamation provided the maximum volume identified in the current Upper Snake BiOp, as well as previous Upper Snake BiOps, in 12 of 17, and 4 of the last 5 years including 2009. Since 2006 when the Nez Perce settlement was first implemented, 487 kaf has been the maximum objective. The full volume of 487 kaf was provided in 2006, 2008, and again in 2009. In 2007, a total of 428,425 acre-feet was provided, which is the maximum volume targeted for years with poor water supply conditions, as existed in 2007. A total of 1.889 million acre-feet have been provided for the four year period, out of a maximum volume identified of 1.948 million acre-feet, or 97%. In addition to increasing the objective to 487,000 acre-feet, the Nez Perce Settlement also increased the probability of delivering at least 427,000 acre-feet. Thus, the Upper Snake flow augmentation program has been successful at securing water for salmon.

The Federal Energy Regulatory Commission (FERC) has indicated in its EIS on the relicensing of the Idaho Power Company's (IPC) Hells Canyon Complex, that it will require IPC to provide 237 kaf from Brownlee Reservoir each summer. The IPC has voluntarily contributed 237 kaf each summer since 2005. IPC has also agreed, consistent with Idaho state law protecting flow augmentation water through the state, to pass upper Snake flow augmentation through its Hells Canyon reservoirs. FERC is also including a requirement for IPC to maintain Brownlee

Reservoir within 1 foot of the minimum elevations necessary to meet its April 15 and April 30 flood control requirements—ensuring that the volume of water necessary to refill the project is minimized in each year. During the summer period, IPC must draft Brownlee Reservoir to elevation 2,059 feet by August 7 of each year, and cannot refill above this elevation through August 31—eliminating any potential for intercepting Reclamation's water deliveries in July and August.

***Optimizing Storage Project Operations***

The Action Agencies work with regional salmon managers throughout the migration season in the Technical Management Team (TMT) to make decisions for optimizing U.S. storage project (Libby, Hungry Horse, Albeni Falls, Grand Coulee, and Dworshak) operations for the benefit of ESA-listed salmon and steelhead. The most current water supply conditions and fish migration information are considered in making decisions to provide the best flow and temperature conditions for migrating juvenile and adult fish. Regionally vetted releases from Dworshak Dam are an example of managing flow and temperature conditions for outmigrating juveniles and returning adults, while also considering river temperature effects on the production at the Dworshak hatchery downstream from the dam. Additional assurance that Dworshak operations are optimized for the benefit of fish is provided through the Memorandum of Agreement between the Corps, BPA, NOAA Fisheries and the Nez Perce Tribe.

***Columbia River Treaty & Non-Treaty Storage***

The Corps and BPA negotiate annual agreements with Canada to provide 1 maf (million acre-feet) of Treaty space storage by April 15 each year to provide the greatest flexibility possible for releasing water at critical times in May through July to benefit ESA-listed salmon and steelhead. These agreements have been executed every year since 1994, with the exception of 1997, a very high flow year when Canadian storage was not required for U.S. fisheries flow augmentation.

***Dry Water Year Flow Strategies***

The Action Agencies are working with the region to develop strategies (operating guidelines) to lessen impact of low runoff to ESA-listed salmon and steelhead during dry water years. This is for the low runoff years, defined as the lowest $20^{th}$ percentile years based on the Northwest River Forecast Center's (NWRFC) averages for their statistical period of record (currently 1971-2000) using the May final water supply forecast for the April to August period as measured at The Dalles. An investigation of dry water year operations is also a commitment made in the Fish Accord with the Confederated Tribe of the Colville Reservation.

***Improved Volume Forecasting & Climate Change Considerations***

The Action Agencies initiated annual performance reviews of the current tools used to develop seasonal volume forecasts. They continue to consider experimental and developing/emerging

technologies and procedures that may help to reduce forecast error and improve forecast reliability to ensure upper rule curve elevations are met more consistently. The net result of these actions may serve to provide improved spring flows for listed salmon and steelhead. In addition, the Action Agencies are working collaboratively with other agencies and research institutions to investigate the impacts of possible climate change scenarios to the Pacific Northwest and listed salmon and steelhead.

## 4. Spring & Summer Spill

The Administration supports the approach in the BiOp that uses a transportation strategy to provide greater protection for Snake River steelhead as recommended by NOAA Fisheries scientists, but will continue to use an adaptive management approach that responds to the 2008 ISAB report. Based on returns from the 1998-2003 outmigration, it is clear that both Snake River steelhead and to a lesser extent Snake River spring/summer Chinook salmon are likely to return at higher rates if they are transported in mid- to late-May rather than left to migrate in-river. Data on fish survival will be reviewed with RIOG again in 2010, and each year thereafter, to determine the best operation for the fish, and there is no longer a presumptive operation for this time period as set forth in the RPA.

The Administration also reviewed the summer spill approach in the 2008 BiOp and believes it provides appropriate protection for listed species by spilling in August until there are very small numbers of migrating Snake River fall Chinook. However, the Administration, consistent with a more precautionary approach to implementation for the species' benefit, will develop, through collaboration, an adult return trigger (based on very low abundance of the listed species) by May 2010. If naturally produced fall Chinook adult returns fall below the trigger, summer spill will continue through August 31 in the following year to provide additional protection for those outmigrants.

The Court asked whether spring and summer spill operations could be set in accordance with recent Court-ordered operations instead of as set forth in the RPA. Under the RPA, spill operations are based not on spill volumes but on achievement of biological performance standards—96% dam survival for spring migrants/93% for summer migrants. In making decisions about spill, NOAA Fisheries and the Action Agencies rely on the best available biological data. Because the best passage results vary by species and dam, the RPA does not lock these operations in place for ten years, but rather calls for spill, bypass, and transport to be adaptively managed on an annual basis. These operations will be based on the best available data, including recent returns as well as biological studies designed to identify the operations that meet the RPA's performance standards.

***Spring Spill/Transport***

Under the RPA, the decision whether to spill or transport is also based upon biological data—which passage method provides the best survival of returning adult fish. Spill reductions in early May are no exception, and the RPA's emphasis on transport from May 7-20 was driven by the best available scientific information. NOAA Fisheries clearly described the adult return rates for Snake River steelhead and Chinook salmon, which formed the basis for terminating spill from May 7-20 at the Snake River collector projects. This information clearly shows return rates consistently higher for transported fish during that time.

NOAA Fisheries' interpretation of recent data was supported by the ISAB (2008). However, the ISAB recommended gaining additional information to determine if these patterns might be changed in the future as a result of recent improvements to the hydrosystem (and because of concerns about potential impacts of increased stray rates of Snake River steelhead on Mid-Columbia River steelhead populations and potential negative effects of transport on Snake River sockeye). After consultation with RIOG parties, NOAA Fisheries recommended that spill at the three transport projects, the only spill operations curtailed in the 2008 RPA, continue through the spring period in 2009 and that data from previous years be assessed and discussed with the RIOG parties annually to inform transport/spill operation decisions in each subsequent year.

***Summer Spill***

Summer spill operations are primarily designed to benefit outmigrating juvenile fall Chinook. NOAA Fisheries described the status of this species (which is strong enough to support adult harvest rates of approximately 40%) and why terminating spill at the four Snake River projects in August (when extremely low numbers of juveniles are present) is adequate protection (NMFS 2008, Section 8.2 and RPA Action 29, Table 2). The ISAB review of spring transport /spill operations did not address summer spill.

The 2008 RPA specifies the use of a biological trigger for determining when voluntary summer spill will be terminated in August at the four Snake River projects (see RPA Action 29 and Table 2); namely, when collection numbers of subyearling Chinook fall below 300 fish per day for three consecutive days at the Snake River collector projects. In the event that collection numbers exceed 500 fish per day for two consecutive days after spill termination, spill will resume until the 300 fish per day trigger is tripped again. Thus, under this program spill could be terminated as early as August 1, but no later than August 31. The Fish Accords modify the implementation of this requirement so the trigger is applied at each dam and the cessation of spill progresses downstream so that spill ceases at Little Goose no earlier than three days after cessation at Lower Granite, Lower Monumental ceases no earlier than three days after Little Goose and Ice Harbor ceases no earlier than two days after Lower Monumental. Like the spring spill program, the summer spill regime will be adaptively managed consistent with a more precautionary approach.

The federal agencies will develop, through regional collaboration, an appropriate safeguard based on adult returns (i.e., very low abundance of the listed species) to continue summer spill at the Snake River projects through August 31 in the following year. The federal agencies will coordinate with the RIOG in developing the indicator so that it will be in place by May 2010, i.e., in time for the 2010 juvenile fish migration. Using this trigger, very low abundance of naturally produced adult Snake River fall Chinook in one year would trigger spill at the Snake River collector projects through August 31 in the following year regardless of the number of juveniles collected.

## 5. Oversight of RPA Implementation

The Court suggested that the federal agencies provide periodic reports to the Court and allow for independent scientific oversight of the tributary and estuary habitat mitigation actions. As explained above, independent scientists are not only reviewing all tributary and estuary habitat actions, but are also significantly involved throughout the project selection process via the expert panels and ISRP. Furthermore, transparency and oversight by the collaboration sovereigns are part of the implementation framework for all issues, not just habitat projects. Annual progress reports and implementation plans will be reviewed with the RIOG, as well as the comprehensive evaluations in 2013 and 2016. The NWFSC will assist NOAA in its review of these reports. These reports and plans will all be available to the public at www.salmonrecovery.gov.

The Administration believes the 2008 RPA provides extensive opportunities for regional oversight of the implementation activities. In addition, the Administration is committed to having significant scientific issues in dispute within the RIOG reviewed by the ISAB, consistent with the now-developed RIOG guidelines. However, the Administration does not believe that continuing court jurisdiction is necessary. The 2008 BiOp as implemented through the AMIP is legally and biologically sound, and adequate oversight mechanisms already exist under the adaptive management provisions as reflected in the AMIP.

**Progress Reports:** Each fall, the Action Agencies will prepare and discuss annual progress reports with the RIOG, including progress on specific performance standards and targets and progress on implementation of the RPA. The NWFSC will assist NOAA in its reviews of the Progress Report. The RPA requires, in 2013 and 2016, the Actions Agencies complete a Comprehensive Evaluation and prepare a report which will be reviewed by the NWFSC and RIOG.

**Adaptive Management:** As new data and information become available from the extensive monitoring and new life-cycle analysis, that information will also be included in the annual progress report and vetted with the RIOG technical and senior technical teams, made up of regional scientists and experts. As discussed in the climate section of this plan, annual progress reports will include a survey of any new climate change studies, scientific papers and/or modeling work relevant to BiOp implementation and fish status.

Potential adjustments to RPA actions will be discussed by the RIOG's various senior technical teams along with specific recommendations for adaptations to the RPA. RIOG senior policy representatives will further discuss adaptive measures so that they may be captured in upcoming implementation plans. The RIOG has already developed initial operating guidelines to ensure transparency throughout this adaptive management process.

**Implementation Plans:** Each year, the annual water management and fish passage plans will be developed collaboratively with the technical and policy teams of the RIOG. Implementation plans covering habitat and hatchery actions also will be developed through the respective RIOG technical and policy teams.

**Dispute Resolution and Independent Science Review:** The Action Agencies have set up a comprehensive program for collaboration with the RIOG during implementation, including both a dispute resolution process and ongoing independent science review. When needed, senior technical teams will outline any elements in dispute, including the relevant scientific information and the various perspectives of the regional sovereigns. These will be presented to the ISAB, IRSP, or appropriate entity.

For policy issues and disputes, the RIOG may also seek an opportunity for public input. If so, timely notice and relevant materials will be made available to the public.

If resolution is not achieved within the RIOG process, a RIOG member may appeal the matter to the regional federal executives, who will make a final decision, taking into account the RIOG's recommendations.

As described in the AMIP, decisions about the development of the Significant Decline Trigger and Early Warning Indicator and whether the trigger or indicator have been tripped or observed are ultimately the responsibility of NOAA Fisheries. Decisions regarding the implementation of Rapid Response and Long-term Contingency Actions are the responsibility of the Action Agencies. However, the federal agencies will endeavor to continue to use collaboration with regional sovereigns and stakeholders to address issues before any decisions are made and to work collaboratively within the federal agencies to assure decision-making is coordinated. Where there are disputes between the federal agencies that are not resolved regionally, or as in the case of lower Snake River dam breaching where significant national issues are at stake, issues will be elevated to the Administration and resolved at the appropriate level.

Since adoption of the 2008 BiOp, the RIOG has met a number of times and has developed initial operating guidelines. The RIOG is currently considering staffing for its supporting senior technical teams.

## 6. Conclusion

The Administration completed a comprehensive review of the 2008 BiOp and RPA in the context of the Court's guidance. As a result of that review, the Administration developed the AMIP to insure that "on-the-shelf" actions are available if the ESA-listed species do not respond as predicted in the BiOp, which provides the robust contingency plan the Court was seeking.

As implemented through the AMIP, the BiOp and its RPA are biologically and legally sound, based on the best available scientific information, and satisfy the ESA jeopardy standard, that is, the effects of the operation of the FCRPS are neither likely to jeopardize the continued existence of the listed species (i.e., combined with the effects of the environmental baseline and cumulative effects the species are expected to survive with an adequate potential for recovery) nor destroy or adversely modify designated critical habitat.

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## Exhibit A – Participant Lists

### May 26, 2009 - FCRPS Listening Session 1
### Double Tree Hotel, Portland, Oregon

| | |
|---|---|
| Bruce Rieman | US Forest Service, retired |
| Casey Baldwin | Washington Department of Fish & Wildlife, Interior Columbia Technical Recovery Team |
| Don Campton | US Fish & Wildlife Service |
| Howard Schaller | US Fish & Wildlife Service, Interior Columbia Technical Recovery Team |
| John Williams | NOAA Northwest Fisheries Science Center |
| Kim Kratz | NOAA Northwest Region |
| Margaret Filardo | Fish Passage Center |
| Mary Power | University of California, Berkeley |
| Michelle McClure | NOAA Northwest Fisheries Science Center |
| Nancy Huntley | Independent Scientific Advisory Board |
| Pete Hassemer | Idaho Department of Fish & Game, Interior Columbia Technical Recovery Team |
| Rich Alldredge | Independent Scientific Advisory Board |
| Rich Carmichael | Oregon Department of Fish & Wildlife, Interior Columbia Technical Recovery Team |
| Rich Zabel | NOAA Northwest Fisheries Science Center |
| Richard Hinrichsen | Consultant |
| Ritchie Graves | NOAA Northwest Region |
| Rob Walton | NOAA Northwest Region |
| Rock Peters | US Army Corps of Engineers |
| Tom Cooney | NOAA Northwest Fisheries Science Center, Interior Columbia Technical Recovery Team |
| Tom Lorz | Columbia River Inter-Tribal Fish Commission |
| Tom Poe | Independent Scientific Advisory Board |

May 26, 2009 - FCRPS Listening Session 2
Double Tree Hotel, Portland, Oregon

| | |
|---|---|
| Mike Carrier | Governor's Natural Resources Director, Oregon |
| Ed Bowles | Administrator, Oregon Department of Fish and Wildlife, Oregon |
| Bob Nichols | Governor's Natural Resources Policy Advisor, Washington |
| Guy Norman | SW Washington Fish and Wildlife Director, Washington |
| Bruce Measure | Northwest Power Planning Council, Montana |
| Rhonda Whiting | Northwest Power Planning Council, Montana |
| Brad Little | Lieutenant Governor, Idaho |
| W. Bill Booth | Chairman, Northwest Power Planning Council, Idaho |
| Rebecca Miles | Councilwoman and Columbia River Inter-Tribal Fish Commission Commissioner, Nez Perce Tribe |
| Dave Cummings | Attorney, Nez Perce Tribe |
| Fidelia Andy | Councilwoman and Columbia River Inter-Tribal Fish Commission Commissioner, Yakama Nation |
| Antone Minthorn | Chairman, Umatilla Tribes |
| Kat Brigham | Councilwoman and Columbia River Inter-Tribal Fish Commission Chairwoman, Umatilla Tribes |
| Ron Suppah | Chairman, Warm Springs Tribes |
| John Ogan | Attorney, Warm Springs Tribes |
| Mike Finley | Vice Chairman, Colville Tribes |
| John Arum | Attorney, Colville Tribes |
| Matt Wynn | Councilman, Spokane Tribe |
| Howard Funke | Attorney, Spokane Tribe |
| Bill Barquin | Attorney, Kootenai Tribe of Idaho |
| Nathan Small | Vice-Chair, Shoshone-Bannock |

## May 27, 2009 - FCRPS Listening Session 3 (Conference Call)
## NOAA Northwest Fisheries Science Center, Seattle, Washington

| | | |
|---|---|---|
| Dr. Rich Alldredge | Professor of Statistics, Department of Statistics | Independent Scientific Advisory Board; Washington State University |
| Dr. Robert (Bob) Bilby | Senior Science Advisor | Independent Scientific Advisory Board; Weyerhauser Co. |
| Dr. Peter Bisson | Research Fishery Biologist | Independent Scientific Advisory Board; US Forest Service |
| Dr. Nancy Huntly | Research Professor of Ecology | Independent Scientific Advisory Board: Idaho State University |
| Dr. Peter Karieva | Chief Scientist & Director Science | The Nature Conservatory |
| Dr. Eric Loudenslager | Fish Hatchery Manager | Independent Scientific Advisory Board; Humboldt State University |
| Mr. Nate Mantua | Associate Research Professor, Aquatic & Fishery Sciences | Independent Scientific Advisory Board; University of Washington |
| Dr. William (Bill) Percy | Professor emeritus | Independent Scientific Advisory Board; Oregon State University |
| Mr. Thomas (Tom) Poe | Consulting Fisheries Scientist, an expert in behavioral ecology of fishes, formerly with the U.S. Geological Survey | Independent Scientific Advisory Board |
| Dr. Mary Power | Professor, Department of Integrative Biology | University of California, Berkeley |
| Dr. Peter Smouse | Professor, Department of Ecology, Evolution & Natural Resources | Independent Scientific Advisory Board; Rutgers University |
| Dr. Joseph Travis | Dean & Professor, Dean College of Arts & Sciences | Florida State University |

## June 25, 2009 - FCRPS Listening Session 4
## U.S. Department of Justice, Washington, D.C.

| | |
|---|---|
| Todd True | Attorney, Earthjustice |
| Chris Wood | Trout Unlimited |
| Jim Martin | fishing groups |
| Nancy Hirsch | Northwest Energy Coalition |
| Nicole Cordan | Save Our Wild Salmon |

## June 25, 2009 - FCRPS Listening Session 5
## U.S. Department of Justice, Washington, D.C.

| | |
|---|---|
| Terry Flores | Northwest River Partners |
| John Sabin | Northwest River Partners |
| Beth Ginsburg | Attorney, Northwest River Partners |
| Glenn Vanselow | Inland Ports and Navigation Association |
| Norm Semanko | Attorney, Idaho Water Users |
| Del Raybould | Idaho Water Users |

## July 7 & 8, 2009 – FCRPS Science Workshop
## U.S. Department of Commerce, Washington, D.C.

| | | |
|---|---|---|
| Dr. Robert (Bob) Bilby | Chief Environmental Scientist | Independent Scientific Advisory Board; Weyerhauser Co. |
| Dr. Peter Bisson | Research Fishery Biologist | Independent Scientific Advisory Board; US Forest Service |
| Dr. Mary Power | Professor, Department of Integrative Biology | University of California, Berkeley |
| Dr. Joseph Travis | Dean & Professor, Dean College of Arts & Sciences | Florida State University |
| Dr. Mary Ruckelshaus | Team leader, Salmon Risk Evaluation group | NOAA Northwest Fisheries Science Center |
| Dr. Daniel Simberloff | Professor, Environmental Science Ecology & Evolutionary Biology | University of Tennessee |
| Dr. Peter Kareiva | Chief Scientist & Director Science | The Nature Conservatory |
| Mr. Nate Mantua | Associate Research Professor, Aquatic & Fishery Sciences | Independent Scientific Advisory Board; University of Washington |

# Exhibit B

## Discussion Questions

1. There are differing viewpoints on the jeopardy standard and its application to the 2008 Federal Columbia River Power System (FCRPS) biological opinion (BiOp). Please provide your views on the appropriate application of the standard and your rationale, and the appropriate means of measuring whether that standard would be satisfied.

2. There are differing viewpoints on whether the BiOp adequately takes account of ocean and freshwater effects of climate change. Please provide your views on whether the BiOp adequately takes account of climate change, and the bases for your views.

3. The BiOp relies, in part, on habitat restoration to mitigate for impacts of the hydropower system. There are differing viewpoints, however, in the region on whether this is an appropriate tactic, and whether the BiOp provides sufficient specificity regarding future tributary and estuary habitat improvement projects. Please provide your views of the appropriate role of habitat restoration programs and the methodology in the BiOp and what additional actions could be taken by the Action Agencies regarding habitat restoration.

4. Compared to operational configuration and actions of the hydropower system proposed in the BiOp, including juvenile fish transportation, what other hydropower system measures would significantly alter the status of the ESA-listed species and why? In responding, please also provide your understanding of the technical and economic feasibility of any such changes.

5. There are a wide range of impacts from salmon and steelhead hatcheries and harvest associated with the FCRPS. Compared to the approach analyzed in the BiOp, what additional actions can be taken by the Action Agencies to ensure that these hatcheries and harvest do not impair the recovery of ESA-listed salmon and steelhead?

6. In addition to the contingencies and performance standards set forth in the BiOp, what alternative actions and decision making provisions could be implemented if the program recommended by the BiOp does not yield the expected benefits?

# Exhibit C

## List of Materials for FCRPS Science Workshop

**FCRPS Biological Opinion**
NMFS (National Marine Fisheries Service). 2008. Endangered Species Act – Section 7 Consultation Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation: Consultation on remand for operation of the Federal Columbia River Power System and 19 Bureau of Reclamation Projects in the Columbia Basin. NMFS, Portland, Oregon

**Supplemental Comprehensive Analysis**
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ATTACHMENTS:

Attachment 1 - BPA & Corps Funded Estuary BPA & C Habitat Projects 2007-2009

Attachment 2 - BPA & Corps Funded Estuary Habitat Projects 2010--2012

Attachment 3 - Pacific Coastal Salmon Recovery Fund (FY2007)

Attachment 4 - USFS Funding (2007-2009) for Columbia River Basin Habitat Conservation Projects

Attachment 5 - BPA Funded Tributary Habitat Projects 2007–2009

Attachment 6 - Reclamation Technical Assistance for Tributary Habitat Projects 2007–2009

Attachment 7 - Action Agency-Convened Tributary Expert Panels for the 2010-2012 BPA Implementation Period

Attachment 8 - BPA Funded Tributary Habitat Projects 2010–2012

Attachment 9 - BPA Funded Tributary Habitat Projects 2013-2017

Attachment 10 - Reclamation Technical Assistance Planned for 2010-2012 Tributary Habitat Actions