Response to Public Comments Received Regarding the Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead

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and

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I. INTRODUCTION

NMFS received 30 sets of comments on the proposed Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead (Plan) by mail, fax, or email. The Oregon Governor's Office (OGO), Oregon Department of Fish and Wildlife (ODFW), and NMFS also held public meetings on the proposed Plan in Albany (on October 20, 2010), Canby (on November 1, 2010), Eugene (on November 8, 2010), and Salem (on November 9, 2010) and received comments and questions at these meetings.

NMFS and ODFW reviewed all the comments address them in the following summary. NMFS and ODFW have revised the Recovery Plan as appropriate based on many of the comments we received. Other comments included useful suggestions, however we did not include them in the Plan either because we do not have sufficient information to do so at this time, or because we expect to incorporate them as we implement the Plan

For readers' convenience, we have assigned comments to major issue categories and, where appropriate, combined similar comments. We received a number of editorial comments, including minor corrections, requests to cite specific documents, and suggested changes in wording to clarify the document. These are not addressed here, but were considered and acted upon as appropriate. The revised Recovery Plan is now the final Plan; the Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead is available at the following website: http://www.nwr.noaa.gov/Salmon-Recovery-Planning/Recovery-Domains/Willamette-Lower-Columbia/Index.cfm.

NMFS and ODFW acknowledge the high quality of the comments and the great care with which individuals and organizations reviewed the Recovery Plan. Salmon and steelhead are important to the people of the Pacific Northwest, and we recognize that public participation is essential to the task of protecting this precious natural resource. Most commenters offered support for the Plan and its implementation, along with thoughtful comments.

The Plan is the product of extensive work by numerous individuals and entities, and we now intend to move forward to the long-term collaboration that will be necessary to implement it. NMFS and ODFW welcome the participation of all interested parties as we move forward into this new and rewarding phase of work.

II. GENERAL COMMENTS PERTAINING TO THE ENTIRE PLAN

Comments Generally Praising the Plan

Collection of Related Comments:

- The Plan includes robust discussion of limiting factors and threats.
- Appreciative of the massive planning effort undertaken by all; impressed with professionalism and dedication shown by the writers, including the OGO.
- Very well thought out, very thorough in addressing limiting factors (LFs) and recommending all of the known appropriate general actions to recovery salmon.
- Overall, the plan is well done.
- Good effort was demonstrated in bringing stakeholders together to discuss the best path forward and discussing overall approach and specific elements.
- The format, borrowed from the lower Columbia, makes sense. General effort to rank actions is appropriate.
- The Broad Sense Recovery Goal is solid and substantiates the many actions associated with this plan. The Plan is a comprehensive effort to recover Chinook salmon and steelhead, if all aspects are implemented. Authors are commended for the thoroughness of the Plan and numerous actions proposed; generally supportive of the Plan.
- High level of professional effort in the Plan improved over previous versions; clear that authors made considerable effort to address comments made by the Independent Multidisciplinary Science Team (IMST) on Mid-Columbia and Lower Columbia River Plans.
- The Plan is well written and comprehensive.
- The Plan appears to be comprehensive and well written, given the scope and scale.
- Encouraged about this multifaceted plan
- Plan is important to angling clubs overall, impressed with the plan in its scope and attempt to seriously identify and address in coordinated fashion all the factors.
- Particularly helpful: identification of specific factors influencing well-being of listed species in natural habitat.
- Compliments on the stakeholder process – it was an inclusive approach.
- Draft is impressive; represents a major step forward… respect the work that went into the draft; volume of information.

Response: The authors and contributors appreciate these compliments and look forward to working with a broad collection of partners to implement the Plan.

Readability of the Plan

Comment: The Plan should have a graphic that shows current status, current modeled abundance, and desired abundance for each population.

Response: Modeled abundance is just one aspect of status. The Executive Summary now has graphics showing current and desired status, and the main body has tables that explain related information.

Comment: It would be helpful to complete a description of the broad picture before detailed discussions of limiting factors.

Response: We have summarized the broad picture in the Executive Summary and in the chapters preceding Chapter 5, which describes limiting factors.

Comments: The Plan should include summaries (of the broad picture and important issues) that are more 'to the point' and located in the Executive Summary and earlier in the body of the Plan. Suggestions included status, limiting factors and threats, key strategies and actions, and desired status in "reader-friendly" style.

Response: We agree and have included summaries in the Executive Summary and in the "User Guides" for top priority subbasins that are available from the NMFS website.

Comment: The Plan should explain the purpose of the Plan (delisting etc.), along with descriptions and explanations of reasons for planned actions in lay terms.

Response: We agree and have edited Chapter 3 as a result.

Comment: The Plan should explain the terms used for limiting factors and threats in a manner that is consistent with other recovery plans. The Plan should define scientific and other terms used in the Plan.

Response: We agree and included an appendix that provides a "cross walk" with the "data dictionary" developed by NOAA's Northwest Fisheries Science Center, and we added a glossary.

Comment: Figure 7-1 would be more informative if it was circular (relate how actions relate to and reduce threats).

Response: Figure 7-1 now includes an arrow connecting actions to threats.

<u>Comments Pertaining to the Adequacy of the Plan</u>

Comment: Are the actions in the Plan sufficient to rebuild wild fish to sustainable levels, especially for the very high risk populations of spring Chinook? If we are serious about recovery, we should include immediate actions for populations at very high risk.

Response: The actions are designed to recover the Chinook and steelhead populations, and we are serious about achieving those goals. The Plan does include actions to improve temperature problems with interim operations at the dams, to reform hatcheries (but not immediately eliminate hatchery programs), and to address other limiting factors. We will continue to look for opportunities to advance recovery in all respects, but the adaptive management process will be critical in order to make progress towards achieving the Plan's goals.

Comment: Enhance the search for the causes of high pre-spawning mortality in Upper Willamette spring Chinook and move immediately to establish fish and human safety standards for the pollutants (or combination of pollutants) that are suspected in contributing to the extremely high rates of pre-spawning mortality.

Response: We agree, and will continue to support research that is necessary to better understand the causes of, and solutions to, this important limiting factor.

Comment: It isn't clear how well we understand how important biological and physical processes relate to recovery. When we used the models to explore threat reduction scenarios, did they correctly reflect the relationships between LFTs and fish performance? We should consider interactive effects of LFTs because they can result in highly variable model outcomes and could lead to changes in rankings of LFTs. The Plan should discuss how the models analyzed the variables contributing to fish mortality (additive and/or compensatory).

Response: These are valid comments and we will endeavor to take them into consideration as part of the implementation and adaptive management. We recognize there are interacting relationships with limiting factors that compound an already complex system. However, we lack some fundamental information to construct more robust models that could potentially guide implementation of actions. The research, monitoring, and evaluation component of the plan is linked to adaptive management to help guide future actions.

Comment: It is inappropriate to suggest confining implementation to the state of Oregon's authority: recovery will require close cooperation of many agencies; it is vital that the Plan make ODFW accountable for actions within its authority.

Response: We agree that implementation will require close cooperation with many agencies and organizations. The Plan lays out numerous actions for ODFW and others to implement, but the Plan itself is not a regulatory document – it will serve as a guide.

Comment: Concerned that condition of the species may not be adequately described: not until page 68 does the Plan explain the extent of the threat to spring Chinook – table 4-7: only 25 natural origin spawners in the Molalla and Calapooia and only 50 in the Middle Fork, North Santiam, South Santiam, and proportion of hatchery origin spawners greater than 90%. If table 4-7 is accurate, our actions may not be sufficient to maintain these populations, let alone recover them.

Response: We agree that the status of the populations at very high risk should be explained earlier, and have revised the Executive Summary and several chapters, especially to reflect the status of the spring Chinook populations that are considered to be at very high risk. As explained in Chapters 4 and 7, some of the UWR Chinook populations are considered nearly extinct or extirpated from their natal basins, and the Plan includes strategies to reintroduce them (see 7.2.1). Here is an excerpt from the Executive Summary:

> Based on a number of the comments, the final Plan places additional emphasis on:
>
> - The importance of successful reintroduction of naturally reproducing salmon and steelhead above the flood control dams in the Willamette River subbasins, and downstream passage for their offspring.
> - The long-term challenges associated with setting priorities to protect the existing salmon and steelhead habitat and restoring the additional habitat needed to recover these two species, including the high priority habitat in North and South Santiam, Middle Fork Willamette and McKenzie subbasins and the rearing habitat in the

entire mainstem Willamette River (including the Lower Willamette River below Willamette Falls).

- The need for over-all integration of research, monitoring and evaluation of spring Chinook, steelhead, and their habitat, to better inform future decisions.
- Climate change and human population growth and how salmon and steelhead recovery efforts can adapt.
- Details describing strategies and actions concerning the effects of hatcheries.

Comment: Success appears to be contingent on achievement of important measures close in time; the Plan should explore threat reduction scenarios with different temporal scenarios.

Response: We agree with this comment and will take it into consideration as we implement the Plan, but we were not able to include specific temporal scenarios in the Plan at this time.

Comment: The ability to assess the scientific adequacy and biological feasibility of the Plan is hampered by the fact that success of the Plan hinges heavily on future research that must be correctly targeted to fill critical information needs. Research called for in the Plan is ambitious and may require decades to complete. The Plan depends on information produced by studies that are only at the level of "research goals to be determined" not detailed proposals. The Plan should have explicit descriptions of how research questions will be approached, or a timeline for determining research approaches, developing proposals, and implementing research programs.

Response: This comment highlights the need for adequate design, scheduling and funding of research and effective application of the principles of adaptive management. The Plan does not include the explicit descriptions of how research questions will be approached, but NMFS and ODFW are committed to pursuing this and other important challenges as we implement the Plan and coordinate with other ongoing efforts, including the Willamette Project Dams BiOp and RPA.

Comment: The Plan remains firmly in the four Hs (hydro, habitat, hatchery and harvest) approach to freshwater salmonid management and should question whether this paradigm remains valid in light of emerging information about the risks of invasive species, ocean conditions, climate change, and human population growth.

Response: The limiting factors cut across the 'Hs,' and the Plan includes sections that discuss these other threat factors. Section 2.1 and Chapter 5 discuss climate change and human population growth in terms of threats. Section 8.4 describes critical uncertainty research needed for invasive species.

Comment: Section 8.5.2 is incomplete, so it can't be determined if the Plan can recover the listed species. The missing policies should be completed and included in the final plan.

Response: Section 8.5.2 discusses data management and access, and explains that there are several efforts underway to improve and expand the data management system in the region. NMFS, BPA, the Power and Conservation Council, and other organizations continue to work on this important suite of issues, and the

implementers of this Plan will incorporate advances in data management into the Plan's implementation.

Comment: Terms such as "to the extent possible" are inappropriate when the science suggests more specific criteria are appropriate.

Response: We found this term used in three places in the proposed plan. We left it unchanged on page 5, regarding ongoing efforts and partners, and changed it to be more specific in the other cases.

Comment: It is important to recognize that the Native Fish Conservation Policy, the Hatchery Management Policy, and state law place the overriding obligation on ODFW and the Commission to "prevent the serious depletion of indigenous species" (ORS 496.012). The primary mission of the agency and commission is to conserve native species. With five of seven populations of spring Chinook at high risk, no population should be allowed to decline as a result of naturally spawning hatchery-origin fish. The Recovery Plan ought to be designed to maximize recovery of wild Chinook and winter steelhead in the basin.

Response: We do recognize these points, and the Plan does as well. For example, Section 1.3 states in part:

> The Plan is designed to meet the requirements of Oregon's Native Fish Conservation Policy (OAR 635-007-0502 to 0509).[1] The NFCP, adopted by the Oregon Fish and Wildlife Commission in November 2002 and revised in September 2003, provides policy guidance to support implementation of the Oregon Plan. The NFCP is Oregon's policy for managing native fish and determining restoration priorities that improve the effectiveness of conservation efforts under the Oregon Plan.

In addition, the Plan (Section 3.1.1, #4) describes biological goals and includes, as one of the five essential elements of viability criteria, the relevant principle from the Lower Columbia/Willamette Technical Recovery Team:

"*Non-deterioration*: No population should be allowed to deteriorate until ESU/DPS recovery is assured, and all extant populations must be maintained. Current populations and population segments must be preserved. Recovery measures will be needed in most areas to stop further decline and offset the effects of future impacts…."

As described in the Executive Summary, the Plan emphasizes short term measures to address the very high risk status of five spring Chinook populations, Tables 7-1 and 9-1 reflect this emphasis.

Comment: The Plan favors an incremental drawn-out process, hoping a trend toward recovery is good enough. A quicker response is warranted. Reducing risk in the short term should be a priority for the Plan, and the Plan should be reconstructed to reflect this priority.

Response: We did not "reconstruct" the Plan, but did strengthen the short term strategies and actions in an effort to better protect the McKenzie and Clackamas

[1] http://www.dfw.state.or.us/fish/nfcp/rogue_river/docs/nfcp.pdf

populations and improve the status of Chinook populations now considered to be at "very high risk." See Chapters 5, 6, and 9.

Comment: Can the Plan address key threats, given that it's voluntary?

Response: The Endangered Species Act (ESA) provides a mechanism to ensure that federal agencies do not jeopardize the continued existence of listed species, or adversely modify their habitat in section 7(a)(2). That is the basis for the BiOp and Reasonable and Prudent Measures applied to the Willamette River Basin Flood Control Project and other opinions in the Willamette Valley, which are incorporated into the Plan. While unauthorized "take" of listed salmon and steelhead is prohibited by section 9 of the ESA, many of the strategies and actions in the Plan are, as the comment states, voluntary. One of the biggest challenges associated with implementing the ESA is implementing voluntary strategies and actions, and NMFS continues to seek effective partnerships with numerous organizations and individuals to help with the goal of achieving recovery and delisting of salmon and steelhead.

Comment: Will the Plan actually get implemented?

Response: Yes. The Endangered Species Act, section 4(f), directs NMFS to "develop and implement" the Recovery Plan. NMFS will work with the agencies, organizations and individuals interested in and assigned to work on implementing the Plan. There is no assurance, however, about the level of funding that will be available to the agencies responsible for implementing the Plan and related efforts. The response to the previous question also applies.

Comments That Address Assurances

Comment: Landowners want assurances that they won't be attacked if things don't go well. Is there some kind of "safe harbor" for landowners? The government should defend landowners trying to do the right thing.

Response: If landowners are not doing anything that would result in "take" of listed species, they are not at risk of an enforcement action. The ESA defines the term "take" to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Sometimes, restoration activities for a short period of time might cause take in the form of habitat disturbance, for example, sedimentation. In these cases, landowners should consult with ODFW or NMFS and ask for guidance on the appropriate permitting processes. Landowners can contact Rob Walton (rob.walton@noaa.gov) or Dave Jepsen (david.jepsen@oregonstate.edu) for more information.

Comment: Farmers want to know what will happen if they are in a priority restoration area and they don't take the recommended action.

Response: It depends on the specific situation. Actions that are recommended in the Plan but not required by law fall into the 'voluntary' category described in previous responses.

Comments Pertaining to Funding Issues

Comment: Several comments express the hope that NMFS, ODFW, and OWEB will receive necessary funding to fully engage in and track implementation of the Plan and the many components that are involved.

Response: OWEB funding is an extremely valuable contributor to salmon recovery and other efforts, but federal and state funding decisions are, for the most part, outside our purview. We agree about the importance of tracking implementation and appreciate the support. Funding for implementation will obviously depend on the complex and challenging funding processes at the state and federal levels.

Comment: Will funding come with release of the Plan?

Response: Not automatically. See the previous responses.

Comment: Plan implementation should include a process replete with carrots – incentives to go above and beyond the minimum required. NMFS and ODFW should increase our participation and financial support for the voluntary efforts and incentives; this should be an action in the Plan.

Response: We agree that financial and other incentives are key to successful implementation of the Plan; ODFW and NMFS will work with their respective funding processes to provide as much financial support to implementing the Plan as possible.

Comment: Worried that the Plan will be not be a main consideration for OWEB funding of projects in the Upper Willamette; UW projects should be a top priority for OWEB and other state and federal funding organizations. The most important aspect of the Plan relates to funding: we need a strategic approach to funding – NWPCC, BPA, OWEB, NMFS Mitchell Act, others should reflect Plan priorities.

Response: One of the roles that the Plan can play is to inform funding decisions, as these comments suggest. NMFS staff will work with the organizations mentioned and others to encourage use of the Plan's priorities in funding decisions. However, the Oregon Watershed Enhancement Board (OWEB) and other agencies have statewide and/or region-wide responsibilities, not just the Willamette Basin.

Comment: NOAA could provide more directed incentives to funders and restoration practitioners; for instance, strategically supporting projects that fit into recovery efforts in high priority areas. NOAA could provide match funding for technical assistance, for instance through OWEB. NOAA could provide direct support for organizations solely dedicated to recovering salmon on agricultural lands (e.g. Salmon Safe).

Response: The primary source of NMFS funds for salmon recovery is the Pacific Coast Salmon Restoration Fund (PCSRF). In Oregon, most of those funds are provided to OWEB, which considers support for a variety of organizations working to help recover salmon. Within the guidelines provided by Congress, we do provide guidelines and assistance regarding priorities for projects funded by the PCSRF. These guidelines are provided to all the relevant states and tribes that participate.

Comment: The economic analysis is lacking - when will it be firmed up? How are priorities weighed in relation to funding?

Response: The requirement for an 'economic analysis' is in ESA section 4(f)(1), which states in part:

RECOVERY PLANS - The Secretary shall develop and implement … "recovery plans" for the conservation and survival of endangered species and threatened species listed pursuant to this section. The Secretary, in development and implementing recovery plans, shall, to the maximum extent practicable … (B) incorporate in each plan - (iii) estimates of the time required and the cost to carry out those measures needed to achieve the Plan's goal and to achieve intermediate steps toward that goal.

We have provided an estimate of the costs of the Plan in Section 9.1.3: "The total cost at the end of Table 9-1 ($265M) represents a minimal cost for recovery, given all of the costs and uncertainty which are not included in this Plan." We have no additional information available that would allow us to 'firm up' these estimates in the near future, but will do so as information becomes available.

It is our intent that the priority strategies and actions in the Plan will be taken into consideration by funding agencies, consistent with other funding requirements and depending on budgetary considerations.

Comment: Will people be taxed?

Response: NMFS and ODFW have no authority to appropriate money or apply taxes. These decisions are made in the state and federal appropriations and revenue processes.

Comment: There are lots of people resources (e.g. fishermen). How can these groups get funding? There's lots that can be done that doesn't cost much, like incubator boxes, but we get stiffed when we try to do things.

Response: There are a number of potential sources of funds for non-governmental efforts, but the total amount of funds is limited. Current sources of funds for salmon and steelhead efforts include OWEB, ODFW, and non-governmental organizations. As was discussed in the public meeting in Salem, incubator, or 'hatch' boxes, have been a useful tool in some circumstances, but counterproductive in others. Important considerations concerning incubator boxes include the availability of appropriate eggs to use, along with the local strategy regarding natural versus hatchery production in the watershed. See section V of these responses to comments.

Comment: There should be an increase in CREP funding

Response: The CREP Program is an extremely valuable contributor to salmon recovery and other efforts, but funding decisions are outside our purview. The Conservation Reserve Enhancement Program (CREP) is a voluntary land retirement program that, as described in the U. S. Department of Agriculture's website (http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=cep), helps agricultural producers protect environmentally sensitive land, decrease erosion, restore wildlife habitat, and safeguard ground and surface water. The program is a partnership among producers, tribal, state, and federal governments, and, in some

cases, private groups. CREP is an offshoot of the country's largest private-lands environmental improvement program - the Conservation Reserve Program (CRP). Like CRP, CREP is administered by USDA's Farm Service Agency (FSA). By combining CRP resources with state, tribal, and private programs, CREP provides farmers and ranchers with a sound financial package for conserving and enhancing the natural resources of farms.

Comments: Regarding Action ID 29 ESU-ADM (from Table 9-1) rather than just recommend that projects related to Plan strategies, create incentives: have NOAA match those funded projects that meet recovery plan goals. Support post-project monitoring plans and NOAA could provide assistance for development of these plans through match funding for technical assistance, for instance through OWEB.

Response: NMFS will consider these and other funding recommendations in the future.

Comment: Linking actions to recovery goals: NOAA could discuss funding post-restoration monitoring and link results to further actions.

Response: We agree that actions should be linked to limiting factors and recovery goals and we will take this into consideration as we implement the Plan, including considering funding for monitoring.

Comments Pertaining to Justification for Actions and Objectives

Comment: The Plan calls for actions largely without explaining the reasons and motivations for the actions – so they may not be understandable to the lay public, such as reducing interbreeding of hatchery and native fish, hatchery reform and riparian zone enhancement,.

Response: We have added a glossary of terms for the lay reader and expanded the explanation of hatchery effects in Chapter 5.

Comment: The Plan needs to more clearly state objectives and more specific actions to move from current condition to desired condition in subwatersheds.

Response: Chapter 3 contains revised descriptions of the goals and objectives, and we have clarified or added strategies and actions in Chapters 7 and 9.

Comments Pertaining to Setting Priorities

Comment: The Plan should support projects that fit specifically into recovery efforts in high priority areas. Describe the key entities and guidance process to be used to decide where and how to implement actions in the future. This concern occurs predominately for actions that are supposed to address land use impacts.

Response: In Section 9.2, the Plan describes how we will work with partners and the priorities we will use:

Setting priorities for management actions is difficult because of the scientific complexity and diverse policy strategies. Although priorities must be science based, their implementation or intensity of implementation are ultimately policy choices. For those implementing management actions intended to support the recovery of UWR Chinook and steelhead populations, we recommend the following priority guidelines.

First Priority

- Habitat protection and restoration actions in high intrinsic potential (IP) areas that provide long-term protection of habitat conditions and conservation of natural ecological processes that support the viability of priority extant populations.
- Actions that integrate remediating key linkages between LFT's are more likely to build resilience and stability in habitat conditions. These actions are best implemented through coordinated Federal and State-wide regulatory Programs.
- Actions in locations which will result in or protect accessible and connected high quality habitat.
- Actions for populations which must achieve viability status (Low or Very Low extinction risk) for ESU viability status.
- Common habitat actions that protect and enhance the viability of *multiple* salmon and steelhead populations, and multiple life history stages. Examples include actions that improve habitat quality, water quality, and flow regimes in the mainstem Willamette River and Columbia River estuary.
- Actions that support conservation of unique and rare functioning habitats, habitat diversity, life histories, and genetic attributes.
- Actions that directly address the key limiting factors and that contribute the most to closing the gap between current status and desired future status of priority populations.
- Actions that provide critical information needed for assessing success and making adaptive management decisions (RME actions).
- Actions which provide resiliency against climate change Second priority:
- Actions that enhance the habitat conditions and restore natural ecological processes for priority extant populations.
- Actions that enhance the viability of priority extant populations.
- Actions that are required to protect and enhance habitats for populations that are not critical for ESU viability.

Other things being equal, actions that demonstrate the following have greater priority:

- Actions where certainty of implementation is high (such as many BiOp actions), or opportunity for success is high (rather than those of limited feasibility).
- Actions that likely produce a large (rather than small) and measurable improvement in viability attributes.
- Actions that support restoration of normative ecological processes rather than short term substitutions for normative processes.
- Actions that integrate other land management, water quality, environmental management and recreational objectives as specified in fish management, conservation, recovery, TMDL implementation plans, or other plans developed with and supported by subbasin stakeholders (rather than those that are isolated, stand-alone efforts).
- Actions that have landowner/stakeholder support and that can generate increased participation.
- Actions that demonstrate cost effectiveness relative to alternative means of achieving the same objectives.
- Actions which have high degree of certainty in effectiveness and outcome.

Comment: Directing resources to the ground and to sound adaptive management efforts will be critical to success.

Response: We agree and have made that a priority in Chapter 9 and intend to emphasize this in implementation efforts.

Comment: The Plan should place a high priority on actions that are most cost-effective, because there is a limit to what society is willing and able to spend on recovery of UWR listed fish. (Table 9-1 of the Plan).

Response: We agree, although as Section 9.1 explains, cost-effectiveness is not the only priority. Some of the highest cost actions are associated with the flood control dams, and NMFS intends to link the implementation of the BiOp/RPA with the Recovery Plan and include cost-effectiveness as one of the criteria for prioritizing both.

Comment: It is important to determine the most cost-effective measures: what would be the consequences if certain actions took longer to achieve than others, and which are the most important to implement earlier in the process than others? This information is needed in order to judge the biological feasibility of the Plan. Is there something different about the UW compared to other recovery domains that suggests a shorter timeframe would be warranted?

Response: The Willamette is not unique in terms of the amount of time it will take to get to recovery, but it is unique in that much of the Chinook spawning habitat has been blocked by the Corps' large storage dams for the last 50 years, and reintroducing fish above the dams is a major effort that entails high cost, engineering expertise, and biological evaluation. The BiOp has started us on this path, but NMFS recognizes that it will take time to achieve safe and effective passage in all four of the major tributaries (McKenzie, South Santiam, North Santiam, and Middle Fork Willamette). In the interim we need effective actions to address factors limiting fish productivity, abundance, and genetic diversity. NMFS intends to link the implementation of the BiOp/RPA and recovery plan and include cost-effectiveness as one of the key criteria.

Comment: Proposed actions should be rated based on likelihood of completion and effectiveness: 1 (< 5 years); 2 (<10 years); 3 lacks funding; 4 lacks cooperators; 5 cannot be completed.

Response: This is a constructive suggestion and is related to several of the priorities provided in Section 9.1, for instance: "Actions where certainty of implementation is high (such as many BiOp actions), or opportunity for success is high (rather than those of limited feasibility)."

Comment: Section 9.1 strategic guidance suggests that habitat and populations are a dichotomy, giving lower priority to populations. This is unacceptable and will not provide the guidance and strategies need to recover the listed fish in the Willamette

Response: We recognize how much salmon and steelhead population viability depends on habitat, and it was not our intent to suggest a dichotomy. For example, Section 9.1 states in part:

This Plan provides a strategic framework for prioritization of management actions to meet recovery goals for UWR Chinook and steelhead populations. The framework recognizes that improving the viability of key populations requires a comprehensive suite of actions that: 1) improve total life cycle survival, 2) remove significant life history bottlenecks, and 3) restore key life history traits.

Comment: the Plan appears to emphasize Willamette Project BiOp RPA actions over other actions. Both are needed and the Plan should be clear about that.

Response: We agree that strategies and actions must emphasize all major limiting factors and threats. We have organized the actions to clarify these non-BiOp actions and have strengthened the Executive Summary and Section 9.1 in this regard.

Comment: We should focus on what we can do today, actions that don't require studies or extra funding.

Response: We agree that short term actions are important. Chapter 5 describes general strategies and the need for immediate actions to protect and improve subbasin habitat and modify dam operations to improve conditions for fish below the dams. Section 9.1 describes priorities and includes the following:

Immediate Actions

Most actions in this Plan are designed to improve VSP attributes and address listing factors over a longer time period, and some of these may have limited short-term effect. Yet, given many of the Chinook salmon populations are already at a high or very high risk of extinction, there is a need to implement now some actions that help avoid greater extinction risk until more substantial actions can begin improving VSP attributes. The following list summarizes some priority strategies and actions to be implemented immediately.

1. Increase wild fish spawning opportunities
   a. Reduce pre-spawn mortality.
      i. Flood Control/Hydro BiOp RPA Actions: To the fullest extent possible and until longer- term measures can be implemented, implement the interim Willamette Project BiOp RPA (NMFS 2008a) measures for: 1) emergency fish procedures and reporting, 2) water quality and quantity, 3) other flow modifications, 4) fish handling facilities and fish handling protocols.
      ii. Initiate/expand efforts to reduce harassment and poaching of adult Chinook salmon in summer holding pools. Mixture of enforcement and awareness promotion by OSP, USFS and BLM in public areas. Harassment and poaching are included as priority items during the OSP Coordinated Enforcement Program (CEP) process. OSP and ODFW staff are currently investigating options and resources for more enforcement presence in the McKenzie
      iii. Initiate/expand efforts to enforce, report water quality/ instream work violations
      iv. Prioritize RME that can identify other *short-term solutions* to reduce pre-spawn mortality

b. Put more wild fish on the spawning grounds
   i. Continue to implement the new hatchery broodstock integration guidelines called for in this Plan
   ii. As opportunities exist, continue to outplant wild fish (collected at collection facilities) into remaining natural production areas

2. Increase juvenile fish survival
   a. Flood Control/Hydro BiOp RPA Actions: To the fullest extent possible, implement the interim Willamette Project BiOp RPA (NMFS 2008a) measures for emergency water quality and quantity, and other flow modifications, until longer term measures can be implemented.
   b. Where wild fish are outplanted above Willamette Project dams, implement spill measures and other interim downstream passage improvement measures. Improved operations are needed at Foster Dam and Cougar Dam. For Cougar Dam, a draft plan is in development for implementation in 2011.
   c. Where wild fish are outplanted below Willamette Project dams, increase incubation and early rearing success by adjusting dam flow releases to meet natural regimes for incubation temperature and flows.
   d. Accelerate the implementation timing for Willamette Project BiOp major milestones for Detroit Dam that will improve juvenile survival. These include advancing the timeline for structural temperature control and integrated structural downstream passage improvements, because there are limits to the benefits provide by interim flow modifications.
   e. Prior to the Willamette Project BiOp major milestones for the Middle Fork Willamette flood control/hydro structural modifications (and concurrent or prior to Head of Reservoir pilot studies), implement immediately the RME for survival effectiveness of reservoir drawdown in the Dexter/Lookout Point dam and reservoir complex. This will also require some immediate RME to guide infrastructure needs to make this work. Concurrent with this effort should be an evaluation of what kind of habitat reconstruction and restoration needs to occur in the old Lookout Point pool.
   f. Continue to outplant unmarked Chinook salmon above Fall Creek dam and assure subsequent juvenile survival with flow releases as outlined in the Willamette Project BiOp RPAs.
   g. Continue to implement FCRPS and Estuary Module actions for predation and flows in the Columbia River estuary.

Comment: ODFW is unable to react to the public because it is placating the environmental community.

Response: We disagree with this comment. ODFW and NMFS pay attention to public comments and sentiment, but both agencies are responsible for implementing public policies that include reliance on the best available science, including habitat and fisheries management. We do not see this as "placating" the environmental community.

Comment: Even with gill nets and sea lions, you think dams are the bigger issue? Does the data show that rivers without dams have better fish survival?

Response: In the Upper Willamette River, the flood control dams blocked extensive amounts of spawning and rearing habitat for steelhead, and even more for spring Chinook, leaving inadequate amounts of habitat to support recovery. Compared to the impacts of the dams, the impacts of all fisheries and sea lions are far less for these species. As a general statement, rivers without dams (natural-flowing rivers) have better fish passage survival than those with dams.

III. COMMENTS ASSOCIATED WITH POPULATIONS, STATUS OF THE SPECIES, LIMITING FACTORS AND GOALS

Comment: Steelhead seem so plentiful - why are we concerned?

Response: The status of steelhead is considerably better than Chinook salmon in the Upper Willamette, but Chapter 4 explains why we consider steelhead to be threatened under the ESA.

Comment: The Plan should explicitly indicate the existing life history and genetic data that support the boundary designations of populations, DPSs, and ESUs and recovery domains within the Upper Willamette and Lower Columbia. Please explain the population designations were done, why, what was the basis for the decisions – political?

Response: The Plan describes this information in summary fashion and refers to the technical documents that include the formal determinations of population and species identification.

Comment: Why wasn't the Coast Fork included in the Plan? Why aren't Tualatin steelhead considered a distinct population? Why isn't the Coast Fork included in critical habitat?

Response: The Willamette/Lower Columbia Technical Recovery Team determined that the Coast Fork and West Side tributaries did not constitute independent populations for purposes of listing under the ESA. Section 2.4 explains how the critical habitat determinations were made.

Comment: Table 4-8, Summary of Current Status, is seriously flawed.

Response: Table 4-8 in the proposed Plan pertains only to spatial structure. Federal and state scientists developed the categories for risk of extinction and made determinations based on the best available science. At this point, we have no information to support changing the risk of extinction for any of the populations.

Comment: Tables 4-6 and 4-7: baseline is recent, not related to historic baseline so it represents a shifting baseline that underestimates the productivity and abundance of the species. Conclusions for risk are questionable. The historical description should include pre-dam trapping and egg taking operations on tributaries such as the McKenzie (1902), MFW (1911), and NF Santiam (1913) that made it impossible to determine the actual historical abundance of salmon in the Willamette for mitigation when the Corps' dams were built.

Response: The historical descriptions, baseline, and risk conclusions as described are based on work completed by the WLCTRT. They provide a practical framework for the Plan, and while they incorporate uncertainties and are not precise, we consider them appropriate at this point. NMFS will conduct risk assessments in the future and update the current descriptions as new information becomes available.

Comment: Has the decline accelerated in recent years?

Response: The total number of returning adult Chinook salmon has been up and down in recent years, but the number of natural-origin fish as remained fairly steady, as shown in Figure 1 below, provided by ODFW.

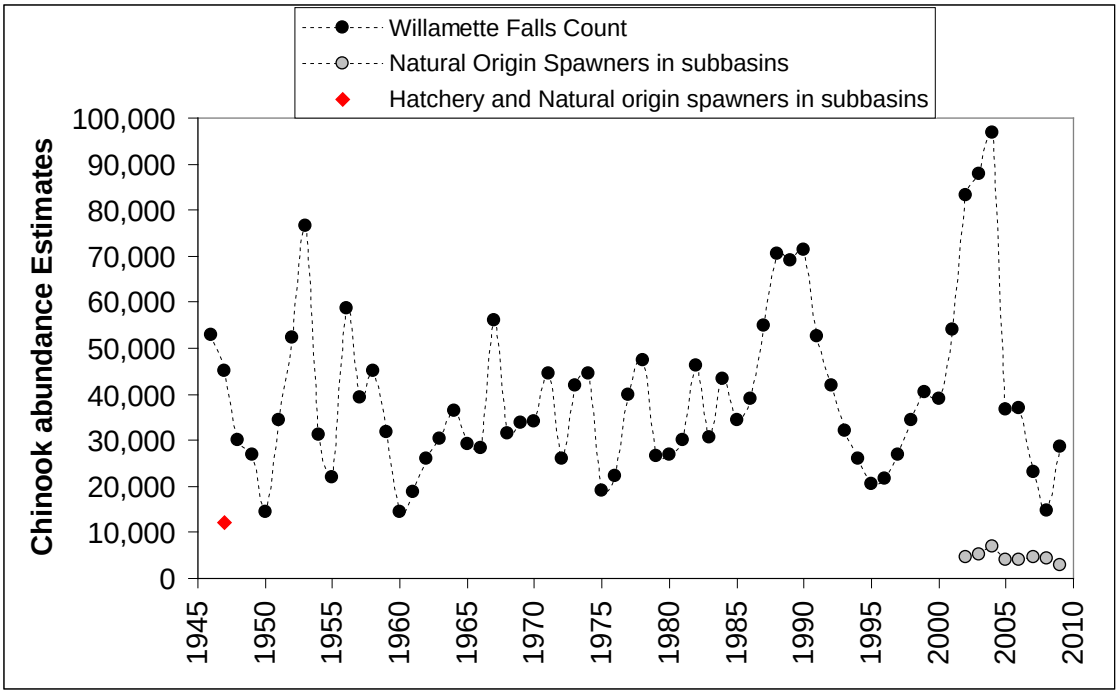

Figure 1. Time Series of Upper Willamette Chinook Salmon Abundance Estimates

Comments Pertaining to Limiting Factors and Threats

Comment: Chapter 8: some listing factors do not identify measurable criteria. The Plan needs to include some or rationale.

Response: Chapter 3 now includes additional information and examples regarding listing factors; Chapter 8 describes research and monitoring associated with these criteria.

Comment: Reiterate that the most severe limiting factor is the significantly altered hydrologic regime.

Response: The importance of the effects of the flood control dams is described in the revised Executive Summary and Chapter 5.

Comment: Page 322, number 3: the Plan should acknowledge the threats, clearly indicating that other actions aren't as effective in light of these threats.

Response: The Plan describes threats in Chapter 5. Chapters 6, 7, and 9 describe the relationships between the threats and sets priorities for actions that are intended to reduce or remove the threats.

Comment: The authors should demonstrate a solid grasp of emerging threats that will likely influence the outcomes of recovery plans.

Response: Chapter 5 now has a more comprehensive discussion on this. Emerging threats such as climate change and human population growth in the Willamette Valley will continue to provide challenges to recovery. These will be key considerations as we implement the Plan.

Comments Pertaining to Goals

Comment: "[D]elisting… will not provide many benefits to the citizens of Oregon" is a 'dismal conclusion' … Chapter 10 should be integrated into the Plan's goals, not an afterthought.

Response: We revised this language.

Comment: The Plan should address conflicts of goals, including changes coming with the Mitchell Act. (Chapter 1, page 3)

Response: Chapter 3 describes the goals of the Plan and focuses on the ESA and "broad sense" recovery objectives. It is true that there are other public policy goals that interact with recovery goals, including other congressional mandates, such as the Mitchell Act and the Magnuson Stevens Act. These are considered in the context of the five threats delisting criteria in Section 3.2.2.

Comments: Concerned that any populations would have a desired status of "high risk." The goal should be low risk. It is not wise to leave the Molalla and Calapooia populations at high risk.

Response: We understand this concern. The WLCTRT recommendations left it to others to decide on a combination of population-level goals that could achieve the ESU-level recovery criteria. The Molalla and Calapooia populations of Chinook salmon are currently at very high risk of extinction and improving their status to high risk will not be easy. If the other populations can achieve the desired status (see the color map in the Executive Summary) then high risk will be sufficient for these two populations. If other populations cannot achieve the desired status, delisting could be based on either of these populations achieving a lower risk status, so we support efforts to improve the status of these two populations as much as practicable.

Comment: The Plan should clarify: is it the goal of the Plan to recover a generic spring Chinook population for the Upper Willamette or re-establish locally adapted wild populations?

Response: In Chapters 7, 8, and 9, the Plan specifies locally adapted populations.

Comment: No case is given as to why we should want native species.

Response: The focus on native species is based on the Endangered Species Act of 1973, which states in part:

> (b) PURPOSES. The purposes of this Act are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species …
> Definitions … SEC. 3. For the purposes of this Act- … The term "threatened species" means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Comment: Are specific spawner objectives established by watershed (population)? The current Plan doesn't clearly include numbers for estimated current population size, delisting criteria, and broad sense abundance goals by population and basin. The numbers on page 463, surrounded by

scientific jargon, don't include the number for delisting: specific numbers for delisting by population need to be included.

Response: Chapter 6 describes scenarios to achieve the desired status for each population. For instance, the "modeled" abundance target for Clackamas spring Chinook is shown in Table 6-11 as 2,314 natural spawners.

Comment: Recovery goals should be revised based on a more accurate estimate of historical abundance - the best available science. Given the uncertainty of historical records, what is the definition of sustainability and persistence used in the recovery plan? Are the metrics developed to determine these objectives tied to the definitions?

Response: The recovery goals are based on the work done by the WLCTRT, and we consider that to be the best available science at this time. The WLCTRT did link the viable salmonid population objectives to the definitions.

Comment: The goal should be three viable populations not two (Ch 3, p 37).

Response: We based the goal on the work done by the WLCTRT. Three viable populations would contribute to an even lower risk of extinction, but at this time we do not consider that a requirement for delisting.

Comment: Table 4-5 spatial structure is arbitrary; it makes no distinction for habitat conditions such as thermal refuge, spawning and rearing habitat conditions, etc. Table lacks relevant detail and has no real relevance to the species.

Response: The spatial structure metrics developed by the WLCTRT are a simplification of a very complex feature. However, we think they are adequate for the intended purposes - describing general goals for distribution of the populations. We may be able to refine these metrics as more information becomes available.

Comment: Strive to harmonize recovery of salmon, steelhead, and bull trout.

Response: We agree with this comment. Bull trout recovery is underway along with the actions in this Plan in the Clackamas, McKenzie, and Middle Fork Willamette subbasins. In general, bull trout require colder, cleaner water and more pristine habitat than salmon or steelhead so efforts to achieve bull trout recovery should benefit salmon and steelhead.

Comment: The Plan needs to more clearly define the goals by population and species.

Response: We think the goals are clearly defined in Chapter 3 and Chapter 6. Specific population-level abundance targets can be found in Tables 6-11 through 6-2

IV. COMMENTS ASSOCIATED WITH WILLAMETTE PROJECT DAMS

Comment: The recovery plan should describe alternatives to major BiOp actions for each subbasin; since in many cases specific alternatives have not been chosen because RME is still required and feasibility has not been determined (e.g. downstream juvenile passage at Willamette dams.) The USACE does not have authorization to care out many of the actions identified in the RPA, so implementation is not certain at this time.

Response: In order for the Action Agencies (USACE, BPA, Reclamation) to be in compliance with the BiOp, they need to fully implement the RPA. The RPA does allow for some adaptive management, because NMFS understood that there is inadequate project-specific information needed to design downstream fish passage facilities (and other measures, such as temperature control facilities) unique to each dam. We also understood that the USACE could not guarantee that Congress would appropriate sufficient funds to design and construct some of the large fish passage and other facilities. If the Action Agencies are unable to meet deadlines in the RPA, NMFS expects that they will propose alternative interim actions to achieve similar biological benefits to what would be achieved with the delayed RPA measure. In cases where deadlines are missed and RPA measures are not completed, Action Agencies may need to reinitiate consultation.

Table 9-1 contains numerous actions for subbasins and we intend to consider alternatives during implementation and adaptive management.

Comment: Where structural changes aren't funded, use daily and seasonal operations to address temperature issues.

Response: The USACE has already implemented "operational temperature control" at Detroit Dam since the Willamette Project BiOp was completed in 2008.

- At Detroit in the North Santiam, the USACE uses spill and turbine flows to release warmer water in the summer to better simulate natural river temperatures and encourage adults Chinook to move upstream and winter steelhead fry to emerge from redds (rather than only releasing cool water from deep in the reservoir) and releasing cooler water in the fall during spawning and incubation (rather than the warm water that was causing eggs to incubate too fast and fry emerging too early). This operation has improved temperatures considerably compared to previous operations; however, it isn't fully successful in the fall, because once the reservoir level falls below the spillway, the USACE can no longer mix turbine and spill flows. NMFS has requested the Action Agencies to move ahead with designs for a structural temperature control facility which would improve the likelihood of meeting downstream temperature targets.
- At Fall Creek Dam in the Middle Fork Willamette system, the USACE has been using the "fish horns" to spill warmer water and encourage adult Chinook to move upstream into the adult collection facility.
- The USACE has formed an internal team that is actively reviewing a list of numerous alternatives for interim operations to provide both temperature control and downstream fish passage. The USACE distributed a draft report to the WATER groups for review and will provide a second draft in September, 2011 regarding operations that are feasible

to begin implementing in 2011 or 2012. For the more complex measures, such as those requiring rebuilding spillgates to allow frequent operation, the USACE would need to conduct a more detailed analysis of the costs and feasibility to implement, and these might not be implemented for several years.

Comment: Immediately address temperature problems structurally at Corps projects where funding is available; consider transferring funding from other programs such as hatchery retooling.

Response: As noted above, the USACE is carrying out a number of operational changes to address downstream water temperatures. Permanent, structural temperature control facilities at these high head dams are very expensive, likely costing $50 million or more (based on cost of Cougar temperature control facility, finished in 2005). The RPA requires temperature control at Detroit, and in the long term, a structural facility may be more feasible from multiple perspectives (cost, biological benefit, effect on power generation, effect on reservoir recreation) than continuing the operational approach. The RPA requirements for hatchery work are aimed at reducing impacts of the hatchery program on naturally spawning fish, and the cost of these measures is very small relative to the temperature control and fish passage measures.

Comment: Is passage at Detroit Dam in the works?

Response: Yes. The RPA requires the Action Agencies to complete construction and begin operation of temperature control (either permanent structural or operational) by 2017 and downstream fish passage by 2023. However, as noted above in answers re interim temperature control, the interim operations cannot fully achieve downstream temperature goals. Moreover, recent tests of juvenile fish survival through the Detroit spillway have shown that it is very hard on fish, as bad or worse than turbine passage. Hence, NMFS has asked the Action Agencies to move forward with design of both temperature control and downstream fish passage concurrently for Detroit, so that a single facility could be designed and constructed to meet both purposes. The USACE has begun the feasibility analysis for this project, and they are also beginning field biological studies to test how well juvenile fish move through the reservoir and approach the dam, but it will be a number of years before a facility is constructed.

Comment: Can EWEB now get off the hook for its responsibilities?

Response: No. The Eugene Water and Electric Board operates several facilities with FERC licenses. The Plan does not change the license requirements or responsibilities of EWEB. In the McKenzie River, EWEB owns and operates two FERC-licensed hydropower projects, Leaburg/Walterville in the lower basin and Carmen Smith (includes Trail Bridge, Carmen, and Smith dams) in the upper basin. Leaburg/Walterville was relicensed in the late 1990s, and EWEB has been implementing a number of fish mitigation conditions, including rebuilding one of the fish ladders, building a juvenile fish screen at Walterville canal intake, and ensuring minimum streamflows are met or exceeded. The Carmen-Smith project is awaiting a new license from FERC, but EWEB has committed to build upstream and downstream fish passage at the lowermost dam,

Trail Bridge, as part of a comprehensive settlement agreement with NMFS, other natural resources agencies, tribes, and other interests.

Comment: Information about FERC licensing should be more accessible.

Response: There are many sources of information on FERC licensing of dams. One is the FERC website, and the citizen guide to hydro licensing, which can be found at this website: http://www.ferc.gov/for-citizens/citizen-guides/hydro-guide.asp. Another source is the NMFS Northwest Regional website's hydropower section: http://www.nwr.noaa.gov/Salmon-Hydropower/index.cfm.

Comment: Accelerate implementation of the RPA, e.g., increased flows to improve downstream conditions.

Response: The RPA requires the Corps to release minimum flows from Willamette Project dams to meet streamflow targets in the major tributaries and mainstem Willamette. The Corps nearly always meets these flows, except during emergency situations such as an unforeseen turbine shutdown or when there is not enough water storage to meet both summer and fall "fish" flows. In the latter case, the Corps coordinates with NMFS, ODFW, and other agencies to assess the tradeoffs between releasing summer flows for rearing juveniles and adults that are holding versus fall flows during the Chinook spawning period. Additionally, the RPA requires the Corps to conduct studies of instream flow needs in the tributaries and mainstem Willamette and to adjust flow targets based on the results of these studies. NMFS is not aware of site-specific data to support release of higher flows in the Willamette, and thus NMFS will not recommend higher flows until new data indicates these would provide fish benefits.

Comment: The commenter adamantly disagrees that Cougar passage may not be necessary.

Response: NMFS agrees that passage at Cougar Dam is needed to access high quality habitat above. Efforts are underway to assess how juvenile Chinook move through the reservoir and approach the dam in order to aid the Corps in designing a downstream fish passage facility that will safely collect and pass fish below the dam.

Comment: Federal dams don't go through FERC licensing…need a similar process.

Response: Federally owned dams do not fall under the jurisdiction of the Federal Energy Regulatory Agency. The ESA consultation process that applies to federal dams is mandated in section 7(a)(2) of the ESA and has been implemented in the Willamette Basin with the BiOp and Reasonable and Prudent Measures applied to the Willamette River Basin Flood Control Project and other opinions in the Willamette Valley.

Comment: Water quality should not be a secondary concern…more weight to water quality issues.

Response: In the RPA, the Corps is required to address water temperature and dissolved gas issues associated with Willamette Project dams. The Corps operates a temperature control structure at Cougar Dam to release water from different elevations within the reservoir, and this allows released water to follow a more normative temperature pattern similar to conditions before the dam was built. In the North Santiam, the Corps has been using spillway and turbine releases to moderate downstream temperatures, and this

operation will likely continue or a permanent structure will be constructed to achieve temperature control. The Corps also releases flows in the summer to meet flow targets in the mainstem Willamette. While these releases are aimed at protecting fish, they also serve to dilute pollutants from point and non-point sources.

Comment: Who makes decisions on the 1.6 MAF in reservoirs for irrigation and M&E uses? What about OWRD "no growth" mission? Will OWRD be able to meet demands of the BiOp and the Plan? How will OWRD pay for the larger workload?

Response: The RPA (Section 2.9) requires the Bureau of Reclamation and the Corps to work with the Oregon Water Resources Department and ODFW to find a mechanism through state water law to protect the flows that the Corps releases from its storage reservoirs for fish purposes. The Corps and Bureau of Reclamation do not have the authority to ensure that water stays in the river after it is released from the dams, but the RPA anticipates that the fish flows will be available instream to provide necessary habitat for listed Chinook and steelhead. The Bureau of Reclamation is the Federal agency that issues contracts for stored water for irrigation purposes. If changes are made to the stored water right that allow for other uses to receive contracts for stored water, then the Corps would likely be the agency that would issue contracts for other uses such as municipal, industrial, and fish/aquatic life. Once users receive a contract from the Federal agency, they would still need to acquire a water right for stored water from OWRD.

Comment: The Plan should include a broad level discussion about how to address predicted climate change impacts on flow by adjusting water levels at dams.

Response: This specific issue is one of many that we will consider on a continuing, long term basis, as we coordinate implementation of the Recovery Plan with the BiOp on the Willamette flood control dams.

Comment: Add language about managing flow and recreation demands at drought times relative to fish needs.

Response: The Willamette BiOp identifies minimum flows (as well as other types of flow operations such as occasional peak flows for flushing sediments and maintaining habitat complexity) that the Corps must release from its large storage reservoirs to protect listed UWR Chinook salmon and UWR steelhead. Additionally, the RPA requires the Corps to conduct fish flow studies to determine if the existing minimum flows are sufficient for each life history stage (i.e., rearing, spawning, passage, and holding). If the flow studies indicate higher or lower flows are better for these various life stages, then NMFS and the Action Agencies will work through the Willamette Action Team for Ecosystem Restoration (WATER) process to modify the RPA minimum flows.

NMFS recognizes that in drought years, and in nearly all years in some of the tributaries, there is not enough water available to meet all of the various users' needs. NMFS has worked with the Corps to prioritize when and where flow needs are most needed for fish, and where we could accept less than the minimum flow rates for short periods during drought or low water years. For instance, in the South Santiam, there is often not enough stored water through the summer and fall to meet the minimum flow requirements for summer juvenile fish rearing and still have enough water to meet adult Chinook spawning and egg rearing

flow requirements. In this situation, NMFS usually agrees to less water released in the summer in order to have sufficient flows for the adult spawning period. As another example, NMFS understands that Detroit reservoir is highly valued by flat-water recreationists and that Lookout Point reservoir has little recreation use. We factor this use into our recommendations to the Corps to test reservoir drawdown at Lookout Point rather than Detroit reservoir as one means to achieve safe downstream fish passage. When all affected uses are considered, drawdown would be more feasible at Lookout Point than at Detroit. In summary, NMFS works closely with the Corps each year to manage the reservoirs and outflow to reduce impacts to listed fish, while recognizing and minimizing impacts to other users, such as recreationists.

Comment: Reiterate that successful implementation of the Plan is dependent on successful implementation of the Willamette BiOps fish passage and temperature modification plans at the USACE projects.

Response: The final Plan does emphasize this point. In the revised Executive Summary, for instance, the Plan states in part: "Based on a number of the comments, the final Plan places additional emphasis on the importance of successful reintroduction of naturally reproducing salmon and steelhead above the flood control dams in the Willamette River subbasins and providing downstream passage for their offspring…."

Comment: Concerned about reliance on uncertain improvements to juvenile downstream passage facilities that have never been properly functioned. Has anyone been successful in downstream passage?

Response: Downstream passage at several Willamette dams is a complex challenge. These high head dams are used for flood control, water storage, and hydropower production. While it is a challenge to design downstream fish passage facilities for low head, hydropower dams, it is a daunting task to do the same at high head dams where the reservoir is miles long and the forebay fluctuates by hundreds of feet. We have learned a lot about fish behavior and passage at dams since these dams were first constructed. New methods will be needed to replace unsuccessful designs that were tried at Detroit, Cougar, and Fall Creek when first constructed. The Corps is moving ahead with studies to evaluate fish behavior at Cougar and Detroit, and progress is being made on alternative facility design concepts. Lookout Point, on the Middle Fork of the Willamette, presents a more difficult challenge due to the long reservoir that supports large numbers of predatory fish.

We have some recent successes at high head dams; for example, a floating surface collector at Baker Lake in Washington is collecting 87% and 72% of downstream migrating coho and sockeye salmon, respectively. A surface screen at Round Butte Dam (Lake Billy Chinook) on the Deschutes River in Oregon is screening out x cfs of water and safely collecting fish for transport around the dam. We also have experience screening low-head diversions, such as at Leaburg and Walterville diversions on the McKenzie River, where the screens safely bypass small fry and smolts and allow 2500 cfs to pass through the screens. These same screens could be used at high head dams; the only engineering challenge is to manage high reservoir fluctuations. NMFS believes this is a challenge that the USACE is fully capable of stepping up to. Our greater concern is

whether the small fry will safely pass through long reservoirs and find their way to collection facilities near the dams. That is why we are requiring the USACE to conduct RME to track juvenile fish movements and survival through the reservoirs.

Comment: What are feasible ways to deal with the dams?

Response: The BiOp describes in great detail how the U.S. Army Corps of Engineers, BPA, Bureau of Reclamation, and NMFS have answered this question. The short answer is that field and modeling studies are underway to evaluate how fish move through the reservoirs and dams, and concurrently engineers are considering alternative conceptual designs for fish passage and water temperature control. The RPA requires the Action Agencies to install and operate facilities by certain deadlines over the 15-year term of the BiOp (until 2023). Additionally, the RPA requires new structural components to a number of the dams to provide facilities to trap and haul adult fish above the dams. The BiOp also requires minimum flow releases from the dams to ensure adequate depth and velocity of water for spawning, rearing, holding and passage. The Corps must test higher "ecological" flows to help restore gravel movement and improve downstream habitat complexity needed for rearing salmonids. Additionally, the Corps is looking at operations to improve water temperature and dissolved gas in the river reaches below the dams.

Comment: Dams impact habitat below; they aren't just a passage problem.

Response: We agree; see the actions in Table 9.1, which are organized by limiting factor type and in many cases include below dam locations. As noted in a previous comment, the RPA requires the Corps to release minimum flows, higher "ecological" flows, and regulate water temperatures and dissolved gas in order to protect and restore downstream habitat. The BiOp also includes a habitat restoration program that requires BPA to work with others in the Willamette to restore high priority sites in the mainstem and tributaries for listed species. Further, the BiOp requires the Corps to assess effects of its 40 miles of revetments (bank protection, often in the form of riprap or large rocks) on aquatic habitat. The assessment will conclude with sites identified for restoration, and as existing revetments need maintenance, the Corps will incorporate "fish friendly" techniques to reduce the adverse effects of these structures on fish.

Comment: Other comments highlighted the importance of determining the most cost-effective measures within the BiOp. What would be the consequences if certain actions took longer to achieve than others, and which are the most important to implement earlier in the process than others? This information is needed in order to judge the biological feasibility of the Plan.

Response: As in the response to the previous comment, NMFS intends to link the implementation of the RPA and Recovery Plan and include cost-effectiveness as one of the key criteria.

V COMMENTS ASSOCIATED WITH HABITAT

Comments That Address Agriculture

Comment: Agricultural management practices need significant improvement and stream buffers, fish passage, reduced irrigation diversions, storm event planning and water quality management plans should be required.

> **Response:** Land use and water quality are critical ingredients in the long term recovery of salmon and steelhead in the Willamette Valley, and well-managed agricultural lands can contribute significantly to salmon and steelhead habitat protection and restoration. However, since most agricultural lands are privately owned, the ESA provides limited ability to place requirements on landowners. This puts a high priority on financial incentives and voluntary cooperation of landowners in the agricultural sector, and productive partnerships between multiple parties will be a focus of our strategy to implement the Plan.

Comment: The major issue is non-point source pollution from agricultural lands. We need to beef up the pollution reduction efforts. Landowners are "getting hammered by the environmental community on non-point discharges." NEDC is working on non-point source issues now so litigation can be expected. They seek more regulatory control over non-point sources. Toxics are also a major issue. Agricultural soil erosion is a huge problem. ODA is very responsive, but it is a struggle to work with SWCDs and counties when there isn't any enforcement hook. ODA staff can now generate complaints. Are the counties working with the agricultural community to control runoff and toxics?

> **Response:** We agree that non-point pollution is a challenge in many respects. NMFS continue to work at all levels (national to local) and will update recovery partners as the issues evolve.

Comments That Address Climate Change and Human Population Growth

Comments: Several comments acknowledged the inclusion of climate change and human population growth in the Plan, but many comments also called for more information on the effects of climatic change, human population impacts on land use and related issues, as well as strategies and actions to respond. We've summarized multiple comments with similar themes.

Numerous comments offered suggestions on how to improve the Plan, including:

- more explicitly consider future effects of human demographic changes (e.g. doubling the population in the Valley during the time it takes to implement the Plan);
- consider how changing land use and climate change may combine to impact salmon and steelhead in the Willamette Valley, consider how changes in land use will affect groundwater availability, the timing when water withdrawals are made, the nature of chemicals put onto the landscape, and the amount of impervious surface and its location within a basin;
- prioritize the protection of important coldwater spring refugia, upstream habitat, forest practices and agricultural standards, and plan for more severe droughts and bigger winter storms;

- recommendations to change forest practices and agricultural standards to anticipate more severe droughts and bigger winter storms;
- the need to anticipate elevated water temperature, increased human infringement in watersheds and also urban water development plans;
- anticipate how salmon and steelhead populations may be disproportionately affected by human population growth and/or climate change and how the Plan should identify salmonid populations that may be vulnerable to these threats and hypothesize about how key or secondary threats might change and how recovery actions might be prioritized or implemented differently with changing climate and growing human population;
- water suppliers have to plan for expected future demand; the Plan should consider future demands for water supplies issues related to grey water, etc.;
- the value of recent studies, including the work of the Climate Impacts Group;
- incorporate forecasting and modeling methods on land and water use to anticipate and plan for alternative scenarios and then implement strategies to protect and restore habitat and water quality;
- increase monitoring, adaptive management and overall level of restoration regarding uncertainty associated with global climate change;
- the elephant in the room that is being ignored is human population growth in the Willamette Valley.

Response: These are very constructive suggestions, and we plan to incorporate many of them as we implement the Plan. We agree that invasive species, ocean conditions, climate change and human population growth pose important challenges to recovery, and that sophisticated forecasting of trends and expected consequences will be an extremely valuable tool to guide our efforts. Sections 2, 3, and 5 in the Plan discuss climate change and related issues, but it is obvious that the information on potential effects of climate change and human population growth on the salmon and steelhead in the Willamette will continue to evolve. Because of this, we expect to apply the principles of adaptive management, using the new information gained during implementation of the Plan. A number of agencies and universities continue to work on related issues and we expect recovery plan implementation will be routinely informed by ongoing research. We are encouraged by the work of Stan Gregory and David Hulse of OSU in examining the Willamette system and possible future scenarios and their effects.

Comment: IMST agrees with the 20% conservation buffers that are added to the goals as part of the conservative approach, but it is unclear how or how much the analytical conservation buffers change estimates of desired status and conservation gaps and how the buffers will compensate for future effects of population growth and climate change.

Response: These are valid issues and we intend to add these to the implementation 'to-do' list.

Comment: The Plan should consider the possibility that human population growth could affect water availability and/or timing of when water will be in the rivers.

Response: This is another valid issue to analyze as we implement the Plan.

Comments Pertaining to Forestry Management Issues

Comments: We received several comments about forestry management practices, including:

- the Oregon Forest Practice rules do not adequately protect aquatic habitat, and the Plan should recommend that the OBF adopt new rules;
- The Plan should explicitly recognize the Northwest Forest Plan's Aquatic Conservation Strategy including interim riparian reserve boundaries and standards and guidelines ("do not retard").
- Restrictions on logging near streams are critical; past and ongoing management has left a huge deficit of large wood. See Heiken, D. (2010).
- Logging is a problem.

Response: We have determined that logging is less of a threat to salmon and steelhead in the Willamette Valley than it is in other regions, and compared to other 'limiting factors' in the Willamette, including the dams that block access to spawning habitat and affect water quality and quantity downstream and degrade rearing habitat downstream. In general, publicly owned lands above the dams are in relatively good condition, although protection and some restoration are vital to long term recovery. However, Section 8.4.4 contains this language: "Critical Uncertainty. Research. Additional research is needed to determine the effectiveness of existing BMPs for forest practices."

Comments Pertaining to Habitat in General

Comments: Some management actions are vague and open to interpretation; the Plan will be more effective if it contains more specific methodologies/prescriptions and resource objectives rather than ecological generalities. For instance, how wide does the riparian buffer need to be? Reword or remove management actions that do not include a clear resource objective. A lot of folks think that the problems (i.e. water quality) have been accurately characterized, but the temperature assessment is not accepted by the forest industry.

Response: NMFS is working with an independent science group, the U.S. Forest Service and Bureau of Land Management to answer the question of shade requirements for adequate stream temperatures. This will aid in development of stream buffers that are adequate to maintain proper stream temperatures. NMFS is also consulting with the Federal Emergency Management Agency (FEMA) over FEMA's administration of the National Flood Insurance Program in Oregon, which will aid in assuring that development standards in NFIP participating communities protect natural floodplain functions.

Comments: In order to protect and restore habitat, there should be an increase in CREP funding for new projects and ongoing maintenance of CREP projects.

Response: The Conservation Reserve Enhancement Program (CREP) Program is an extremely valuable contributor to salmon recovery and other efforts, but funding decisions are outside our purview. The CREP is a voluntary land retirement program that, as described in the U. S. Department of Agriculture's website (http://www.fsa.usda.gov/FSA/webapp?area=home&subject=copr&topic=cep), helps agricultural producers protect environmentally sensitive land, decrease erosion, restore

wildlife habitat, and safeguard ground and surface water. The program is a partnership among producers; tribal, state, and federal governments; and, in some cases, private groups. CREP is an offshoot of the country's largest private-lands environmental improvement program - the Conservation Reserve Program (CRP). Like CRP, CREP is administered by USDA's Farm Service Agency (FSA). By combining CRP resources with state, tribal, and private programs, CREP provides farmers and ranchers with a sound financial package for conserving and enhancing the natural resources of farms.

Comment: There is a lot of spawning in small creeks above and below the falls.

Response: We recognize that small creeks can make a contribution to diverse spatial distribution of the salmon and steelhead populations. We will continue to work with watershed councils and others to protect and improve these areas.

Comment: The Plan should emphasize restoring watershed conditions and fish habitat above the dams, not just below and clearly state the objectives of above-dam habitat.

Response: We agree. Key objectives of the recovery plan include re-establishment of natural production of steelhead above the dams in the North and South Santiam, and spring Chinook above the dams in the North and South Santiam, McKenzie, and Middle Fork Willamette watersheds. Protecting and restoring habitat on National Forest lands, particularly in the Willamette and Mt. Hood National Forests, will be critical to achieving recovery in the Upper Willamette.

Comment: The plan must recognize that substantial improvements are needed in terms of habitat maintenance, protection and restoration on federal and non-federal lands.

Response: We agree. Chapter 5 describes limiting factors and threats and Section 5.2 states in part:

> "*Upper Willamette Mainstem and subbasins.* Land management activities have also severely degraded stream habitat conditions in the Willamette River mainstem above Willamette Falls and associated subbasins. In the Willamette River mainstem and lower subbasin mainstem reaches, punctuated urban development and widespread agricultural effects have impacted aquatic and riparian habitat quality and complexity, water quality, and watershed processes. In upper subbasin mainstem reaches and subordinate tributary streams, past and present forest practices, roads, and barriers are the major drivers of habitat conditions. Aquatic habitat degradation is primarily the result of past and/or current land use practices that have affected functional attributes of stream channel formation, riparian connectivity, and magnitude and frequency of contact with floodplains, as well as watershed processes.

Comment: The Plan should stimulate efforts to restore side-channel complexity and cold water refugia in the mainstem and other streams.

Response: We agree. The Plan discusses these issues in Chapters 5, 7, 8 and 9. Development in the floodplain can limit available and potential channel migration and processes which sustain cool, complex, connected habitat. Zoning and permitting at local levels is critical if we are going to protect and restore key habitat features for threatened Chinook and steelhead in the Willamette. NMFS is consulting with the Federal Emergency Management Agency (FEMA) over FEMA's administration of the National

Flood Insurance Program in Oregon, which will aid in assuring that development standards in NFIP participating communities protect natural floodplain functions.

Comment: The commenter supports habitat restoration actions for mainstem and tributaries; especially riparian are restoration, side channel reconnection and floodplain reconnection. Alteration of habitat is the most significant LF for recovery other than dams.

Response: We agree, but also acknowledge the challenges associated with implementing protection and restoration actions, especially on private land, which includes the vast majority of salmon habitat below the dams. Implementation of the Plan's strategies and actions for habitat restoration will require a concerted effort by a significant portion of society in the Willamette Valley. We also note the connection between habitat features and operations of the dams, which have altered streamflows significantly in the Willamette. Without adequate hydrologic function, salmon and steelhead habitat cannot be maintained.

Comment: The effects of land use change, particularly urbanization, on habitat are not sufficiently examined with respect to limiting factors. Human population growth is a well established and growing threat to salmon and steelhead populations. We should also understand how changes in land use might affect groundwater availability, timing of water withdrawals, nature of chemicals put onto the landscape, and amount of impervious surface and its location in the basin.

Response: We agree that much work needs to be done to understand how land use impacts habitat and the status of salmon and steelhead. While Chapters 5, 7 and 9 discuss limiting factors, strategies and actions, we intend to continually update the scientific information on these issues as part of our adaptive management plan.

Comment: Tributaries around Albany and Corvallis are in horrible shape.

Response: There are a number of areas in the Willamette Valley that have seriously degraded habitat. A primary goal of the recovery plan is to work with landowners and others to protect the habitat that is still functioning and restore enough of the degraded habitat to provide for recovery.

Comment: Does the BPA mitigation funding have a dual purpose for fish?

Response: Yes. The following excerpt from an October 15, 2010 letter from NMFS' Regional Administrator Will Stelle to BPA Acting Vice President for Environment, Fish and Wildlife, Lorraine Bodi, explains this:

NMFS acknowledges and supports Section F of the Wildlife MOA, "Dual Fish and Wildlife Benefits." To satisfy RP A 7.1.3 commitments for 2011 through 2023, we understand that BP A will fund these "dual benefit" projects in addition to providing dedicated funding under the Opinion. Section F of the Wildlife MOA notes that many of the protection and restoration projects funded under the Wildlife MOA will benefit both wildlife and fish species. It requires BPA and the State of Oregon to ensure that at least 10% of the funding provided under the MOA benefits both wildlife and ESA-listed anadromous fish species. NMFS recognizes the value of these provisions and supports efforts to achieve fish benefits from protection and restoration funded by the Wildlife MOA…. As all parties in the Willamette

Basin move forward to protect and restore habitat for ESA-listed fish and other species, NMFS supports efficient use of funds to achieve objectives of the NMFS' Opinion and RPA. We encourage all parties to take an ecosystem approach to habitat restoration and to use cost-sharing and efficiencies where possible to realize the maximum benefit to habitat and listed fish.

Comment: Oregon Concrete and Aggregate Producers Association (OCAPA) funded Dr. Peter Bailey of OSU to research the impacts of aggregate mining on off channel habitat. It shows rapid growth in off channel ponds. The recovery plan should include this research.

Response: We are aware of, and will consider this work, which has not been published as far as we know.

Comment: Recreational misuse of the land has a big impact on fish.

Response: This is evident in some areas. Chapter 5, Limiting Factors and Threats, discusses related issues in detail, and Table 9-1 includes a number of actions intended to protect and restore diverse categories of land. We recognize that boat docks, trails, and other recreational facilities and uses can contribute to degraded habitat.

Comment: Riparian buffers were the subject of the Lane County Task Force on riparian/floodplain code revisions. Does the Plan address this? How do we explain and encourage riparian area values?

Response: Yes, the Plan discusses riparian/floodplain buffers in Chapters 5 and 6 and actions related to them in Chapters 7 and 9.

Comment: The Plan should consider private residential development in the counties.

Response: Since the vast majority of landownership in the Willamette Valley below the dams is in the private sector, the protection and restoration of salmon and steelhead habitat on private lands will be a major challenge for the recovery of these listed species. NMFS is consulting with the Federal Emergency Management Agency (FEMA) over FEMA's administration of the National Flood Insurance Program in Oregon, which will aid in assuring that development standards in NFIP participating communities protect natural floodplain functions.

Comment: Permitting is a challenge; the Plan should consider strategies to expedite restoration project permitting.

Response: We agree. This is an important issue that is being examined in a number of different venues. The Plan recommends actions to provide better information and guidance to prospective permit applicants, local governments, and others; as well as continued efforts by regulatory agencies to provide for programmatic permits and other mechanisms to make the processes work better and faster. NMFS Northwest Regional office has a weblink entitled Streamlining Restoration Project Consultation Using Programmatic Biological Opinions that can be found at this website: http://www.nwr.noaa.gov/Salmon-Habitat/ESA-Consultations/restoration-projects.cfm

Comments Pertaining to State Laws and Habitat

Comment: How does SB1010 work within this process? The Recovery Plan should build on SB1010 Plans and the Oregon Plan.

Response: The authors intend the Plan to build on SB101 and other state laws. The following description is from the Oregon Department of Agriculture's website (http://www.oregon.gov/ODA/NRD/docs/pdf/water/quick_guide.pdf).

In 1972, the Federal Clean Water Act was developed to clean up water pollution from human activities such as forestry, factories, wastewater treatment plants, and agricultural irrigation runoff. Oregon's Agricultural Water Quality Management Act, also known as Senate Bill 1010, was created in 1993 with the input and support of the agricultural industry and the State Board of Agriculture to further help the industry address agricultural water quality issues. This legislation is the foundation of the Oregon Department of Agriculture's (ODA) Agricultural Water Quality Program **(**the Program) administered through the Natural Resources Division.

The Act directed ODA to assist the industry in reducing pollution from agricultural sources. In 1995, the legislature supplemented the Act with ORS 561.191. This statute reinforces ODA's responsibility for and jurisdiction over agricultural practices and water pollution associated with farming practices on agricultural and rural lands. … Working in partnership with the 45 local Soil and Water Conservation Districts, the ODA identified 39 watershed-based Agricultural Water Quality Management Areas across the state. Water Quality Specialists worked with local farmers, ranchers and community leaders to serve as Local Advisory Committee (LAC) members for each management area. Each LAC identified local water quality problems and opportunities for improvement. The 39 resulting Agricultural Water Quality Management Area Plans, now approved by the Board of Agriculture, guide the resolution of agricultural water quality issues in the 39 management areas. As the LACs created the plans, they also developed companion administrative rules for that management area. The rules provide an enforceable backstop to ensure all landowners do their part to avoid and resolve water quality problems.

Comment: With the agricultural water quality program in place, is water quality still a problem in Oregon?

Response: Yes, unfortunately, it is. We know this because the Clean Water Act requires testing of waterways. The Department of Environmental Quality (DEQ) does this work in Oregon. DEQ has identified many streams throughout Oregon that do not meet water quality standards.

Comment: Could new goal 5 rules be adopted requiring something like development of a regional ecological framework that would include recovery plan actions?

Response: Yes, we think goal 5 can work in conjunction this Plan. The Oregon Land Conservation and Development Commission established statewide planning goals and guidelines. Goal 5 states in part:

> To protect natural resources and conserve scenic and historic areas and open spaces. Local governments shall adopt programs that will protect natural resources and conserve scenic, historic, and open space resources for present and future generations.

These resources promote a healthy environment and natural landscape that contributes to Oregon's livability.

Comment: Regulations for flood control & freshwater habitat aren't in place.

Response: This comment is not completely accurate. The Corps has regulations in place regarding flood control and there are regulations regarding water quality, stormwater runoff, streamside buffers for timber harvest, and pesticides. NMFS will continue to review and consider regulations affecting recovery.

Comments Pertaining to the Tributaries on the West Side of the Willamette Valley

Comments: We believe and agree with the draft plan that westside tributaries provide good yearling habitat for Chinook and should be protected and restored. Westside tributaries are in better shape and are important to steelhead. Why aren't westside tributaries considered a population? Concern expressed that people will give up on taking actions there. The Plan should note the possibility of spawning in west-side tributaries and more attention should be focused on the Long Tom River as rearing habitat for spring Chinook and winter steelhead; call for more research into juvenile rearing and other use of the Lower Long Tom River and other west-side tributaries; and emphasize the importance of restoring habitat complexity and floodplain function in the Lower Long Tom River.

Response: Although we agree with many of these comments and support protection and restoration of west side habitat, the ESA goals clearly warrant assigning the highest priorities to those watersheds where the goal is viability (low or very low risk) for the salmon and steelhead populations. As explained in Section 2.3.1 of the Plan, the Technical Recovery Team delineated the populations based on geography, migration rates, genetic attributes, life history patterns, phenotypic characteristics, population dynamics, and environmental and habitat characteristics They used the definition of an independent population as "a group of fish of the same species that spawns in a particular lake or stream (or portion thereof) at a particular season and, which, to a substantial degree, does not interbreed with fish from any other group spawning in a different place or in the same place at a different season" (Myers et al. 2006, following McElhany et al. 2000). Using this approach, the team did not identify any populations on the west side of the Willamette River. We will continue to encourage efforts to protect and restore habitat in the west side tributaries, but will not place as high a priority on those actions as in areas where the top priority populations reside.

Comment: The Plan should list the Monroe Dam as a limiting factor.

Response: The Monroe Dam, located in the Long Tom watershed, does impair steelhead and salmon habitat. However, as we discussed in the previous response, we have not given threats and limiting factors affecting the west side tributaries as high a priority as those affecting populations targeted for full viability.

Comments Pertaining to Urban Areas

Comment: Urban areas are gauntlets, but more work is done in rural areas. Does the Plan create an urban CREP? Stormwater and urban waterways should be a focus.

Response: We agree that urban waterways are an important part of the Upper Willamette salmon and steelhead habitat, and that issues including stormwater, physical habitat for rearing and water quality are important. We have enhanced the actions in table 9-1 relating to urban areas.

Comment: Why bother to clean up the river when Portland releases raw sewage during stormwater events?

Response: This is a fair question, but it is important to note that the salmon need adequate habitat conditions to survive at every life stage, so other parts of the Willamette are also important. Readers can see the City's update on its efforts to reduce sewer overflows at the following website: http://www.portlandonline.com/bes/index.cfm?c=31030&a=316721. Here are several excerpts from the website:

Portland's combined sewers overflow into the Willamette River an average of 100 days per year during wet weather. Combined sewer overflows (CSOs) carry raw sewage that pollutes water and threatens our quality of life. Controlling CSOs is an important part of Portland's efforts to improve Willamette River water quality. CSO solutions include projects to remove stormwater runoff from sewers and building new facilities to carry sewage and stormwater to the Columbia Boulevard Wastewater Treatment Plant. Portland started the CSO control program in 1991 with a set of cornerstone projects hat remove stormwater from combined sewers. Projects include installing street sumps and sedimentation manholes, building separate sewers for stormwater in some neighborhoods, encouraging homeowners in targeted neighborhoods to disconnect downspouts from the sewer system, and removing west hills streams from the combined sewers.

Environmental Services completed the Columbia Slough Big Pipe in 2000. The 12-foot diameter pipeline reduced CSOs to the Slough by 99%. Construction of the Swan Island Pump Station and the West Side Big Pipe was completed in 2006. The 3.5-mile, 14-foot diameter tunnel carries combined sewage from the west side of the Willamette to Swan Island, where the Swan Island Pump Station pumps the sewage to to the Columbia Boulevard Wastewater Treatment Plant. Also in 2006, Environmental Services began construction of East Side Big Pipe, a six-mile long, 22-foot diameter tunnel to collect sewage from the east side of the Willamette. The city completed tunneling in October 2010. When all east side CSO construction is complete in 2011, CSOs to the Willamette River will be reduced by 94%.

Comment: The Plan's description of limiting factors is incomplete regarding water quality factors along urbanized streams.

Response: We have added to the descriptions of urban area limiting factors and to the actions to address them in Table 9-1.

Comments Pertaining to Water Quality

We received numerous comments on the subject of water quality in the Willamette River. These included concerns, recommendations, and questions. We have grouped them by topic.

<u>Numerous comments called for stronger language in the Plan relating to water quality and pollution in general, including</u>

- Water quality is definitely a concern, and will be increasingly so without changes in how waste and stormwater is treated before it's discharged into or upstream of salmon-bearing streams.
- More weight should be given to water quality issues as a key concern in recovery planning.
- It appears that ODEQ and the US Environmental Protection Agency view water quality impairments as significant issues for salmonid recovery in Oregon. If this is true, why shouldn't these standards be given more weight (i.e., be ranked as key concerns) in recovery planning?
- The role of toxins should be give more weight, particularly when combined with lower base flow conditions that might be made more extreme by the "urban stream syndrome" in cities.
- Wholeheartedly support efforts to curb input of toxics into the Willamette and Columbia River systems.
- We need to beef up the pollution reduction efforts.
- Emerging contaminants: successful recovery will depend on comprehensive understanding of the interface of historic persistent toxics and emerging persistent toxics;
- The Plan should address, in greater detail, toxics.
- Under SB 737, which requires toxics reduction strategies, the 52 largest treatment plants are now developing pollution prevention plans for their effluent addressing 118 chemicals. Abandoned mine clean-up activities are vital. There are no federal funds to clean them up. OSU Extension should be funded to get all of the old DDT out of barns in the valley. For example, the DEQ hazards fine monies could be used to fund Extension to go out and collect it all. Other counties and ODOT should be encouraged to adopt Lane County's last resort policy on herbicides (e.g. using goats in a pilot vegetation control program under power lines). We should also assure that as the dams are improved, their PCB containing equipment is removed. The COE can bring toxics experts to support investment in their structures. Pesticides around streams need to be addressed.
- Clarify the importance of water quality (early life history stages etc.) and review attached citations on pesticides and road runoff.

Response: The Plan discusses the role of water quality as a limiting factor in Chapter 5, strategies in Chapter 7 and actions in Chapter 9. While water quality is not at the top of the list in terms of limiting factors at this time, we recognize the long term challenges associated with protecting water quality for salmon and steelhead. We will need to track water quality issues and adaptively manage recovery actions in response to the best available scientific information.

Comment: Protect and conserve *existing* high quality habitats and natural processes that support productive capacity. Protection of existing high quality habitats is one way to insure no net loss in habitat quality and is one element in the maintenance of normative ecological processes. Many habitat objectives are likely to be met through habitat protection and the associated natural

recovery of upland and riparian areas. Land acquisitions, easements, cooperative agreements, and protective land designations are means to accomplish protection of high quality habitat.

Response: Water quality is definitely a concern, and will be increasingly so without changes in how waste and stormwater is treated before it's discharged into or upstream of salmon-bearing streams. Research on the high pre-spawning mortality of spring Chinook is ongoing, and water quality is one of the areas being studied. The final recovery Plan has emphasized these issues and other priorities in Chapter 5 and Chapter 9.

Several comments Pertained to Roads

Comment: The Plan should call for prohibition of the use of copper in brake pads.

Response: Legislators have introduced a bill on this issue in the Oregon Legislature this year, but it did not pass. Without taking a position on this particular bill, ODFW and NMFS are aware of the research linking copper to salmon mortality and think actions in the Plan calling for reductions in pollutants form an important part of the recovery strategies.

Comment: NPDES permits for road drainage structures must account for the full effects of roads on aquatic habitat.

Response: We intend to review several aspects of NPDES permitting. For example, mainstem Willamette streamflow requirements are based on old criteria that may not always be appropriate for sustain salmon and steelhead habitat. Table 9-1 includes several actions related to NPDES criteria, and we will consider the results of ongoing and future research that is examining the role of road drainage issues on salmon and steelhead habitat.

Several comments Pertained to Human Safety Related to Water Quality and Fish Consumption

Comment: Move immediately to establish fish and human safety standards for pollutants and combinations of pollutants that are suspected in contributing to the extremely high rates of pre-spawning mortality. The Plan should call for the establishment of tolerance levels to humans and fish for harmful pollutants, including the combined effects of lethal, sub-lethal, and unquantified pollutants in the Willamette.

Response: The Oregon Environmental Quality Commission recently approved new water quality standards designed to reduce or prevent toxic pollutants in Oregon waterways and add health protections for people using state rivers and streams for fishing, drinking water and other purposes. The new state standards will go into effect pending U.S. Environmental Protection Agency approval. For more information, contact the Oregon Department of Environmental Quality.

Comment: Voluntary and regulatory efforts must be supported and in some cases better enforced.

Response: NMFS has been consulting with EPA on the Oregon Toxic Standards that will address some of these issues. In addition, consultation with EPA nationally on pesticide use will also aid in solving some of these issues. NMFS has worked extensively with Oregon DEQ on development of guidance for stormwater facilities that will improve water quality. Oregon DOT has been instrumental in adopting these standards for their projects. Continued outreach to cities and counties to adopt the most appropriate

guidance is needed, and if the guidance is adopted, we expect improvements in water quality.

Several comments Pertained to Monitoring Water Quality

Comment: Consider prioritizing emergent toxics monitoring; NOAA should support increased research into the effect the contaminants might have on pre-spawning mortality. Give priority to greater breadth of study and monitoring for known persistent toxics and emergent toxics, including but not limited to pharmaceuticals and PBDEs – far too little is known about the health impacts, e.g. on pre spawning mortality. Emerging contaminants: successful recovery will depend on comprehensive understanding of the interface of historic persistent toxics and emerging persistent toxics;

Response: We agree. NMFS's Northwest Fisheries Science Center has an ecotoxicology group within the environmental conservation division that has taken a lead role in this work. We will update the Plan and implementation efforts as new information is provided.

Comment:
Other Suggestions Pertaining to Water Quality

Several suggestions were received relating to water quality and pollution in general, including - Agencies (BPA) should use goats instead of herbicides, but barriers prevent them. The Plan should encourage NPDES pollutant trading between point and non-point sources; we need a system with lower transaction costs. The Plan should encourage the 15 major water utilities in the basin to use natural systems for treatment; we need to build on progressive practices.

Response: These are all good suggestions and as part of the adaptive management strategy we will evaluate them as to their viability and implementability as we progress with the Plan.

Tension between groups

Comments: Landowners are "getting hammered by the environmental community on non-point discharges." NEDC is working on non-point source issues now so litigation can be expected. They seek more regulatory control over non-point sources.

Response: We recognize that water quality regulations are likely to create concerns and challenges for landowners and the public in general. However, if the ecosystem is to support native species on into the future and avoid extinctions, our society will have to find ways to maintain water quality levels within the limits required by the species.

Comment: EPA, NOAA, etc., are causing real problems with multiple federal Acts (CWA, ESA, etc.) Growers and other want clarity on what's needed. We need to avoid having landowners get hammered by multiple parties on multiple issues - this requires and integrated approach, but agencies are unwilling to let other agencies take the lead.

Response: We agree that an integrated approach to implementing Federal laws is needed. NMFS has been working with EPA and other agencies on a number of issues and will continue to do so,

Comments Pertaining to Water Quantity

Comment: Lost Creek below Dexter Dam: late summer withdrawals are a problem

Response: This relates to an important and challenging suite of issues that have been identified throughout the Western United States. There is no easy answer to the many questions that arise regarding the intersection of western water law, instream flow requirements for protected species and other related issues. This will be an ongoing subject of discussion throughout the recovery process in the Willamette Basin and elsewhere.

Comment: Salem water supply is under threat by the BiOp

Response: We do not think there is a direct link between the BiOp for the operation of the Willamette Project dams and the Salem water supply.

Comment: Opportunities exist to reuse water … we need a water reuse bill… we should have water tax credits, like BETCs, for water conservation; could there be a special fund for water conservation?

Response: NMFS supports the reuse of water to decrease withdrawal needs. The state legislature is the proper avenue for tax credits and other incentives

Comment: Support recommendation in Chapter 9 for mainstem habitat restoration to remove revetments where it makes sense- there are far too many. Corps needs to better coordinate internally and with others to enable removal with greater urgency.

Response: Comment noted.

Comment: What is being done to address the estuary?

Response: On **Feb. 14, 2011,** NNMFS released the final *Columbia River Estuary Endangered Species Act Recovery Plan Module for Salmon and Steelhead*. It addresses the estuary recovery needs of all Endangered Species Act-listed salmon and steelhead in the Columbia River Basin. All recovery plans for listed Columbia Basin salmon and steelhead will incorporate the estuary module by reference. For more information, please go to this website:
http://www.nwr.noaa.gov/Salmon-Recovery-Planning/ESA-Recovery-Plans/Estuary-Module.cfm

Comment: ODFW should encourage OWEB to add a section in all grant proposals that requires the grantee to detail how their project fits with recovery planning efforts.

Response: One of the intended purposes of the Plan is to serve as a guide for funding agencies including OWEB.

Comment: How can watershed councils do their work with so little money?

Response: That is a good question, but unfortunately, there is no requirement to fund the watershed councils. This underscores the importance of the current funding sources as well as the continuing need for additional resources. Currently, there are numerous non-profit agencies that are very involved in the Willamette Basin that offer grants for restoration projects that help maintain the various council's efforts. Further efforts to develop funding sources will be needed.

Comments specific to the Molalla watershed: In the Molalla, is spawning habitat a problem (temperature?)? The Plan should include protection of existing cold water areas in the Molalla.

Response: We agree. This point is made in Section 5.4.2 and elsewhere, and Table 9-1 includes a number of relevant actions, including 125 which includes this action:

1. Expand cool water zones within the Willamette River mainstem and tributary reaches in the lower subbasins by meeting TMDL temperature load allocations for approved TMDL's (see ODEQ Willamette Basin and Molalla Basin TMDL reports).
2. Using above plans, conduct analysis to ID strategic and priority reaches for the purposes of this Recovery Plan and specific LFT's.
3. Provide resources to conduct this analysis then fund and fix these reaches first
4. Increase amount of riparian forest buffer to improve shading function, and restore hyporheic function and capacity.
5. Protect and restore extensive vegetative riparian shade buffers in lower subbasins. Use fencing, weed control, and planting of native conifers and other species at appropriate sites.
6. Increase conservation easements through incentive programs or land retirement programs (CREP) throughout subbasins.

<u>Several suggestions were received relating to water quantity in general, including</u>

- The biggest problem is that water is free. Several watersheds are over appropriated. Cities face 'use it or lose it' incentives. No one entity is charged with maintaining instream flows. Research by Jeff MacDonnell forecasts water scarcity. How does the Plan address this?
- The integrated water resource strategy should support the Plan.
- Oregon should implement remote imagery tools to track diversion and evapotranspiration (Andrew Purkey).

Response: These are good comments and ones that will be evaluated as part of the adaptive management approach in the Plan. Water quantity is, and will continue to be, an issue that is difficult to resolve. Flows needed for all users (including fish) will need to be analyzed basin by basin to determine what is available. Climate change may alter flow patterns and future usage will need to be evaluated as these flows change. It will take effort and collaboration on the part of all users to facilitate any changes that need to be made.

Comment: Are there additional actions in the Plan related to stored water that aren't in the BiOp?

Response: No, the BiOp on the Willamette Project Dams is where water storage actions are described.

VI. COMMENTS ASSOCIATED WITH FISHERIES MANAGEMENT

Comments Pertaining to Hatchery & Harvest Combined

Comment: Since the purpose of the mitigation hatcheries is to produce fish for harvest and hatcheries are a problem, then harvest should also be a problem. Both hatcheries and harvest should be considered together a limiting factor/threat.

Response: ODFW and NMFS determined that for many Chinook populations, high proportions of hatchery fish spawning in the wild is a limiting factor/threat. Since these fish are produced for harvest, fishery harvest should also be included as a limiting factor/threat. However, we have determined that the current situation in the Willamette with these populations is such that fishery harvest can be implemented with acceptable impacts to the co-occurring natural-origin fish by mark selective fisheries. This management strategy sustains valuable fisheries while protecting natural-origin fish. Since the issue of concern is the level of interactions, including natural spawning by hatchery fish in the wild, recovery actions are proposed to reduce this problem by 1) producing more natural-origin fish so that the proportion of hatchery fish is decreased, 2) implementing actions to harvest more hatchery fish to reduce surplus back to the population areas, 3) implementing actions to improve homing and collection so that fewer hatchery fish spawn naturally, and 4) adjust hatchery production levels to minimize chronic surpluses after fishery, broodstock, and conservation needs. It is possible to have fishery harvest be a limiting factor/threat and not hatchery programs for a particular situation. Thus it also possible to have a situation, as is for the Willamette, where the hatchery program is a limiting factor/threat (excessive hatchery fish spawning in the wild and low levels of natural fish) and not necessarily fishery harvest.

Comment: For populations that are at very high risk of extinction, hatchery programs and fishery harvest should be immediately eliminated.

Response: The Plan relies upon limiting factor/threat analyses to specify the key bottlenecks that need to be remedied in order for the populations to recover. If the bottlenecks are not addressed, the population's status will not be able to improve to levels required for recovery. If fishing impacts are not a key limiting factor/threat for a particular population, then eliminating fishing would not recover the population. Addressing the root causes for the decline of the population is essential. The Plan's limiting factor/threats analysis specifies concerns with hatcheries that need to be remedied. Fishery harvest is no longer deemed a limiting factor/threat because of the substantial reforms that have been implemented for both species over the last 10-20 years. Therefore, we do not think eliminating fishing entirely would significantly improve population health. This is what we have observed over the last 10-15 years. Fishing impacts have been significantly curtailed (>75% reduction for winter steelhead and spring Chinook compared to pre-ESA listing years), yet the populations of steelhead and Chinook have not improved. Natural-origin Chinook returns over the last five years have been the lowest observed on record. The Plan does, however, include strategies and actions to reduce the negative impacts of hatcheries on the listed populations (see Chapters 7 and 9).

Comment: The summer steelhead hatchery program is used to mitigate for fishery harvest losses associated with the impacts of the construction and operation of the Willamette Dam Project on winter steelhead. How do summer steelhead mitigate for winter steelhead?

Response: The original purpose of the hatchery programs in the Willamette was to offset the expected losses to commercial and recreational fisheries in the ocean and freshwater from the reduction in natural production due to the construction and continued operation of the 13 federal dams in the Willamette Basin. Congress authorized the use of hatcheries to offset fishery harvest losses and ODFW and the U.S. Army Corps of Engineers have a cooperative agreement to fund the hatcheries. The purpose of the hatchery programs was never to mitigate or recover natural production in the wild. The state of Oregon decided that the hatchery summer steelhead program provided the most benefits to fishery harvest compared to a hatchery winter steelhead program in the Willamette. This is one of the reasons why ODFW discontinued the hatchery winter steelhead programs in the late 1990's. From an ESA perspective, the best available science suggests it is a lower risk to the listed winter steelhead populations to have a segregated summer steelhead hatchery program compared to an equivalent winter steelhead hatchery program. ODFW and NMFS believe the differences in run and spawn timing between summer run and winter run minimize genetic and ecological interactions compared to a hatchery program of the same run and spawn timing as the natural population, however the fact that, in recent years, returning summer steelhead have outnumbered the native winter steelhead "raises genetic and ecological concerns… (and) non-native summer steelhead releases are still a concern." (Ford et al 2010). In light of these considerations, ODFW and NMFS expect to continue the summer steelhead programs for now, but will continue to monitor the issues and adjust the programs if warranted.

Comment: Stocking of hatchery fish and non-native species management (i.e. fishing regulations) should promote reducing the adverse effects on listed salmon and steelhead.

Response: In waters that contain ESA listed salmon and steelhead, hatchery rainbow trout are the only fish stocked (although bull trout are scheduled to be reintroduced to the Clackamas River this year). No non-indigenous fish species are stocked in flowing waters of the Willamette Basin. Significant reforms were implemented in the late 1990's to reduce impacts on listed salmon and steelhead from hatchery trout. Since then, the only areas stocked with hatchery trout are the McKenzie River, Yamhill River, and Willamette federal reservoirs and upstream areas. All other fish stockings (besides the summer steelhead and spring Chinook hatchery programs) have been discontinued in ESA waters. Fishing regulations for non-native fish species have also been liberalized over the last decade to reduce impacts on ESA listed salmon and steelhead. There are no limits to the number of bass (and other warmwater fishes) in the mainstem Willamette River above Albany, Molalla River, and Calapooia River. All of the other rivers do not have appreciable numbers of non-native, warmwater fishes (i.e. Middle Fork, McKenzie, and Santiam). The reservoir fisheries are managed under regional bag limits for non-native, warmwater fishes. The bag limit for hatchery summer steelhead is three fish per day (more liberal than the regional limit). ODFW and NOAA Fisheries believe the fishing regulations for hatchery trout, summer steelhead, and non-indigenous fish species are liberal and probably near the maximum harvest rate attainable at existing fishing

levels. It is important to remember many of the non-indigenous species are not harvested because of the health warnings for toxins and other pollutants from poor water quality in the Willamette River.

Comments on Fishery Harvest

Comment: Several commenters disagreed with the assessment that fishery harvest is no longer a limiting factor/threat for many of the Chinook populations. The Clackamas spring Chinook population was the only population where fishery harvest was still identified as a limiting factor/threat.

Response: We revised the Plan to better explain the changes made to fisheries management that have reduced the impacts to natural-origin spring Chinook. These changes were not clear in the previous draft. Since the ESA listing in 1999, freshwater fishery exploitation rates have been reduced by more than 75% compared to the past. Ocean exploitation rates have also been reduced substantially reduced since the 1970-1980 base period. Given these substantial reductions in fishery harvest impacts, analyses have shown that fishery harvest is no longer a "bottleneck" impeding the recovery of these populations. There are now other limiting factors keeping the populations at very low levels. The substantial loss of holding and spawning habitat from the federal dams, altered water temperatures below the dams during the summer and fall leading to lower survival of fish, inadequate passage of juvenile salmon through reservoirs and dams, and the reductions in habitat quantity and quality below the federal dams are now the primary reasons keeping these populations from recovering. Over the last 12 years, ODFW has reduced fishery exploitation rates on natural Chinook salmon substantially (lowest on record), yet the populations are still in poor health. This validates the limiting factor/threats assessment that fishery harvest is not likely to be the remaining bottleneck in the life cycle of these fish in order to get recovery.

Comment: The Plan assumes the current harvest management program is adequate for recovery of ESA-listed salmonids. Is this an accurate assumption?

Response: Before the current mark selective fishery management program was approved under the ESA, thorough analyses were conducted to see if the new fishing regime was adequate. The conclusions demonstrated the new fishing regime would not inhibit the recovery potential of the ESU. Exploitation rates were low enough to allow recovery if the remaining limiting factors were addressed. Fishery assessments occur on an annual basis and fisheries management will continue to be reviewed and revised as necessary in the future.

Comment: There is not an analysis of the cumulative fishery harvest mortality throughout the life cycle of the fish included in the Plan.

Response: This is incorrect. We reported cumulative fishery exploitation rates in the Plan for ocean and freshwater fisheries. All modeling of the benefits of the recovery actions in the Plan included cumulative fishery mortality.

Comment: Sportfishing in freshwater may contribute to adult Chinook pre-spawn mortality from natural fish being caught and released.

Response: The mark selective fisheries allow harvest of adipose fin clipped Chinook and require the release all non-adipose fin clipped Chinook. The commenter is concerned that the level of catch and release on natural-origin may increase pre-spawning mortality. ODFW evaluated prespawning mortality of Chinook caught and released in the Willamette River prior to implementation of mark selective fisheries. Lindsay et al. (2004) estimated 12.2% of the spring Chinook caught and released in the Lower Willamette River, using fishing gear and techniques typical of fishers, died prior to spawning. Since not every unmarked Chinook in the river is caught and released, ODFW has estimated that overall mortality rates from freshwater fisheries over the last decade have been in the range of 6-10% (ODFW 2010). Since prespawning mortality rates (e.g. 40-90%) in nearly all of Chinook populations (exceptions McKenzie and Clackamas) are substantially greater than the fishery mortality rates, other physical and biological factors besides being caught and released are likely causing the extremely high prespawning mortality rates.

Comment: Is fishery harvest managed by exploitation rate or escapement goals? The focus should be on meeting population escapement goals for winter steelhead and spring Chinook.

Response: Since the ESA listing in 1999, ODFW has managed fishery harvest using exploitation rates. ODFW developed and NMFS approved Fisheries Management and Evaluation Plans (FMEPs) for winter steelhead and spring Chinook in 2001 with the maximum exploitation limits that could be imposed on natural-origin fish based upon mark selective fisheries. NMFS continues to support this management in the Willamette River. Managing fisheries for escapement goals would be beneficial. However, in the Willamette, all spring Chinook populations and most steelhead populations would NOT meet recovery escapement goals even in the absence of ALL fishing impacts. Since the exploitation rates on these stocks are low (particularly for winter steelhead) and escapement goals are not being attained suggests that other limiting factors/threats besides fishery harvest still need to be remedied for the populations to recover.

Comment: Are there any studies documenting the effects of sportfishing on listed spring Chinook and winter steelhead?

Response: Extensive documentation exists on the impacts of sportfishing on winter steelhead and spring Chinook in the Willamette River. ODFW has conducted creel surveys on every fishery in the past. Other creel surveys (i.e. Lower Willamette River) occur annually. See NOAA's website for more information (http://www.nwr.noaa.gov/Salmon-Harvest-Hatcheries/State-Tribal-Management/FMEPs-Current.cfm)

Comment: Winter steelhead and spring Chinook still face unacceptable levels of mortality (25-50%) in Lower Columbia River commercial fisheries.

Response: This is not correct. Fishery managers have constrained commercial fisheries in the Lower Columbia River affecting winter steelhead and spring Chinook returning to the Willamette River dramatically since at least 2002. They manage impacts in season and rates have not exceeded 10% on any population for more than a decade. See ODFW's website for more information (http://www.dfw.state.or.us/fish/OSCRP/CRM/index.asp).

Comments on Hatcheries

Comment: A high proportion of fish found in the estuary are of hatchery-origin. The high levels of hatchery fish must have an adverse effect on natural-origin fish.

Response: We agree. Recovery plans have identified the effect of hatchery fish in the estuary as a concern for Willamette and Columbia Basin species. Implementation of the recovery actions in the Plan (and other recovery plans) will help increase natural production of wild fish thus reducing the high proportion of hatchery fish in the estuary.

Comment: For the relatively strong populations (i.e. McKenzie and Clackamas), eliminate hatchery programs.

Response: Fishery managers have, and will continue to, implement hatchery reform actions to reduce the adverse effects of hatcheries on these populations. At this point in time, NMFS believes adverse impacts can be minimized while still allowing a hatchery program to exist. If hatchery fish spawning in the wild can be managed to low levels (<10%), then the primary risks imposed by these programs on listed fish can be managed appropriately. Since NMFS' BiOp on hatchery programs in 2000, ODFW has placed restrictions on the percentage of hatchery fish allowed to spawn in the wild in the two population areas and has set prescribed limits for the McKenzie population and agencies are working on measures to reduce impacts.

Comment: Many of the Chinook populations are proposed to be deliberately managed with "split basin" goals (hatchery mitigation production emphasis below federal dams, natural-origin fish management focus above federal dams).

Response: This is true for most of the populations. Adult spring Chinook are not able to access historic habitat above the federal dams in the North Santiam, South Santiam, McKenzie, and Middle Fork Willamette rivers naturally. Fish ladders are not currently feasible at these tall, high head dams. Therefore, trap and haul of the adult salmon is required to recolonize historic holding and spawning habitats in the headwater areas. The fact that salmon have to be manually trapped, sorted, loaded, and hauled by truck above the dams, provides a convenient mechanism to control the proportion of hatchery fish above the dams. The Plan specifies the long-term goals for wild and hatchery fish above and below dams, depending upon the population's role in recovery and the amount of habitat below the dams. In some populations, hatchery spring Chinook spawning below the federal dams will have to be reduced to low levels (i.e. < 10% below Detroit/Big Cliffs dams in the North Santiam), whereas in other populations where there is almost no historic habitat below the dams (i.e. Middle Fork Willamette) it is not essential to reduce hatchery fish spawning below Lookout/Dexter/Fall Creek dams. The goals were derived based upon the circumstances of each population. Since the federal dams have split the population areas, the Plan's approach to hatchery management is based largely on the current configuration of the dams. If the federal dams were not present, a different hatchery management strategy would have been devised.

Comment: Intraspecific interactions between hatchery and natural-origin fish is a concern and will likely confound and limit recovery efforts, particularly in the areas downstream of the federal dams.

Response: This is a concern to us. However, the best available information suggests interactions between hatchery and natural-origin below the federal dams is of limited scope and duration. The goal of the hatcheries in the Willamette Basin is to release fish as smolts that readily emigrate to the estuary. The releases of hatchery Chinook and steelhead occur earlier in the year than the bulk of the natural-origin emigration. Data from smolt trapping monitoring at Willamette Falls shows hatchery fish passing this area within 14 days of release from the hatchery. The data also shows little overlap in run timing between hatchery and natural fish. In addition, sampling of fish in the summer shows a low percentage of hatchery-origin fish residing in the key rearing areas of natural-origin fish below the federal dams. It is also important to note the hatchery releases are all in the mainstem rivers. Natural-origin fish rear and grow throughout the entire population area (including the mainstem river and all of the tributaries). In summary, interactions between hatchery and natural fish occur to some extent undoubtedly, but available data suggests the interactions to be minimal. However, as explained above, the Plan suggests that in some populations, hatchery spring Chinook spawning below the federal dams will have to be reduced to low levels (i.e. < 10% below Detroit/Big Cliffs dams in the North Santiam).

Comment: Hatchery production levels should be decreased as natural-origin fish production increases.

Response: Agree. Once the impacts associated with the construction and continued operation of the 13 federal dams in the Upper Willamette have been reduced from implementation of salmon and steelhead recovery actions and natural-origin fish returns have increased, fisheries managers should reduce hatchery mitigation production.

Comment: Authorization and appropriation for hatchery programs may change in the future as population's recover from actions related to the federal dams.

Response: Agree. See above comment.

Comment: Reintroduction plans should be included describing how hatchery fish will be used for all areas including the Molalla River.

Response: Agree. The Plan's reintroduction plan for hatchery programs is fully described for all population areas, including the Molalla River, in Appendix E.

Comment: Reference streams need to be established without impacts of hatchery programs to evaluate wild fish recovery.

Response: The Plan designates many natural-origin fish production areas in the Upper Willamette ESU and DPS to address this issue. Some are in effect and others still need management actions to be implemented in order to eliminate hatchery effects. For the steelhead DPS, half of the populations (Molalla and Calapooia) have not had any hatchery steelhead released in the population area since the late 1990's. For the Chinook ESU, six natural-origin fish areas (Clackamas above North Fork Dam, South Santiam above Foster Dam, Calapooia River, McKenzie above Leaburg Dam, McKenzie above Cougar Dam, Fall Creek have been in effect with varying degrees of success. The intent is to make all of these areas free from hatchery fish spawning over the next few years in order to have reference areas.

Comment: According the Plan and other sources, the spring Chinook hatcheries have been homogenized into one broodstock. Since salmon populations develop locally-adapted characteristics, the broodstocks should be managed at the population level.

Response: Before ESA listing, mixing among hatcheries was common. Since the NMFS BiOp in 2000, ODFW has managed all Chinook hatchery programs with local returns. No intermixing among programs has occurred over the last decade.

Comment: Naturally spawning hatchery fish can degrade the reproductive success of wild fish. Specific criteria should be included to control the number of hatchery fish spawners by watershed.

Response: Agree. The Plan specifies the criteria for naturally spawning hatchery fish by population, although it must be acknowledged hatchery Chinook are being outplanted above the federal dams for reintroduction because few natural-origin fish are available in most circumstances.

Comment: The Plan does not give enough consideration to the HSRG (Hatchery Scientific Review Group) recommendations for the hatchery programs in the Upper Willamette Basin.

Response: ODFW is implementing most of the HSRG recommendations in the existing hatchery programs.

Comment: Hatchery trout in the McKenzie should be considered a limiting factor.

Response: The effects of all hatchery programs were considered in the development of the limiting factors/threats analysis for McKenzie Chinook. Hatchery trout were identified, as a secondary limiting factor in Table 5-7, however other threats were more important to the recovery of the population.

Comment: In Chapter 7, releasing hatchery smolts may conflict with the BiOp RPA that requires USACE to rear hatchery fish more like wild fish.

Response: This may be true depending upon the specific situation and circumstances. However, even with releases of hatchery smolts, current information suggests that these fish should be better aligned with the characteristics of wild smolts. Thus, research is currently being conducted on how to reduce the size of hatchery origin smolts and make their release time more similar to wild smolts.

Comment: Section 8.5 should discuss policies for containing hatchery threats. The best available science should be used to construct evaluation thresholds for hatchery metrics and stray rates. The Plan's protocols for hatchery operations don’t support recovery - each population should be managed for naturalizing fish for local adaptation.

Response: The Plan does include goals for reducing the adverse effects of hatchery programs. An important task for NMFS and ODFW will be to integrate recovery goals and plan implementation with future consultations on hatchery programs and in doing so, ensure that Hatchery Genetic Management Plans are consistent with recovery.

Comment: Table 9-1 fails to mention evaluating the cost of the hatchery programs. A recent review determined that all hatchery programs for Lower Columbia River were deficit spending

programs. The Plan should call for a cost-benefit evaluation of using hatchery fish for harvest from Upper Willamette programs.

Response: Recovery plans are required to provide cost estimates of recovery actions, but we do not consider calling for a cost-benefit evaluation of hatchery programs to be appropriate for the Plan at this time.

Comment: There are several problems with the strategy (page 347 27-NS) - ensure summer steelhead smolts migrate quickly to the ocean: it presupposes continued release of summer steelhead, which is in conflict with recovery; if summer steelhead continue to be released, criteria should be established to limit the number of residualized hatchery steelhead. The ecological impacts of naturally spawning summer steelhead aren't being taken into account: ODFW's own research shows there can be a 50% reduction on production of wild steelhead in streams that contain both summer and winter steelhead. It is apparent that it is more important to ODFW to augment sport fishing than to recover listed fish.

Response: Existing data and analysis show few residual summer steelhead. In addition, angling regulations have been modified recently to promote the harvest of the residual summers in existing fisheries. Not much more can be done without reducing/eliminating the program; we will continue to evaluate this issue and consider modifying the program in the future based on new information as it becomes available.

Comment: The Plan should note that more than 70 percent of the fish found in the estuary are of hatchery-origin.

Response: The high percentage of hatchery fish, and the density-dependant limiting factors that result, are discussed in the Estuary Module, which can be found at: http://www.nwr.noaa.gov/Salmon-Recovery-Planning/ESA-Recovery-Plans/upload/Estuary-Mod.pdf

VII. Other Comments

Actions
Costs
Implementation of the Plan and Adaptive Management
Molalla River – Specific Comments
Nutrients
Outreach, Education and Partners
Predation
Pre-spawning mortality
Research, Monitoring and Evaluation (RME), Data Gaps and Uncertainties
Risk

Comments Pertaining to Actions

Comment: The Plan needs to include a comprehensive plan to control disease affecting Chinook and steelhead populations, including a description of diseases affecting these species, the monitoring plan to be used, and specific plans to confront disease outbreaks. E.g. would IHNv infected adults be destroyed, juveniles released? Would is sampling wild fish for infection a higher priority than hatchery fish?

Response: Disease was not determined to be a limiting factor or threat, but hatchery programs have disease protocols in place. Details can be found in hatchery management plans.

Comment: Subbasin actions should address effects of revetments. Table 9-1, rows 33 and 39 should list revetments…

Response: We revised Table 9-1 and include actions regarding revetments in numerous places, including actions 31, 37, 91 and others.

Comment: Action ID 160 on page 251 should include acclimation sites.

Response: Details of the Molalla hatchery program will be worked out during the HGMP process. We will consider acclimation sites for the Molalla.

Comment: Would like to see more specific actions.

Response: Table 9-1 includes over 160 pages of actions; these will be tracked and evaluated during the implementation phase of the recovery effort.

Comment: Actions should be in priority order where possible.

Response: Table 9-1 provides the priority designation for each action.

Comment: Are the projects in item 15, page 11 of the May 4 summary included in the Plan? Many of the interviewees described projects they were working on or that they have planned that could promote recovery. They are described briefly below. The question: *are these projects included in the recovery action plan?*

- Delta Ponds - restoration has to address salmon. It is fascinating to watch the restoration. Native vegetation, benches, logs are being used and people can see it happening and

working in the middle of an urban area right next to the Valley River Center. The Greenway biking system allows you to see the Delta Ponds and the new bridge will make it even more obvious.

- Friends of Mt. Pisgah - 12,000 acre Wildish property development issue where a housing development has been proposed. Resolved? Could use a letter of support from the Governor on the Wildish Lands.
- 905b General investigation - the Metro Waterways Study. Eugene/Springfield used 1135-206 money historically to start the planning work. Jim Johnson from the COE (Planning Director) came out from DC in 1999-2000 and enabled a regional approach for an overall set of studies on floodplain/habitat/water quality, etc. It was in the study phase for several years to identify high priority projects for implementation to offset land use impacts. Eugene picked the Amazon Basin. Springfield picked Cedar Creek, which will have major positive influences on the McKenzie. There is much opportunity in this area. It is a headwater stream with a diversion from the McKenzie. SUB also has a mitigation project for its wells all in this area. North of Cedar Creek is the floodplain of the McKenzie. Springfield put the money into it. The county didn't put anything into it. Now the EA process is done and they are ready to go with specific projects design, but the money has stopped. There has been lots of good work that needs to be moved forward. The landowners have bought in and, if funded, the project will provide floodplain and drainage benefits.
- Clackamas FERC license renewals - temperature issue - PGE. PGE made significant changes in operations and invested in habitat restoration. There is a lot to learn from what PGE has done already on the Clackamas.
- The New Albany sewage treatment plant is now nearly fully funded with stimulus dollars. Albany also eliminated fish passage barriers on the S. Santiam River.
- Albany is working on mainstem with the Calapooia watershed council with MMT funding. Thompson's Mill fish passage, Talking Water Gardens project with Wah Chang reduces nitrogen through effluent stepping stones. Removing more nitrogen and discharge cooler water - stepping stone from Santiam. A treatment innovation could also go in at the IP site. At the confluence of the old oxbow lakes there is an opportunity for thermal reduction. The COE needs to define the program in this stretch. COE is working with the city on mitigation.
- Minto Brown habitat restoration grant - federal, Salem is working with NRCS. Converting agricultural land back to habitat. Salem just invested $400,000 in a fish ladder on Pringle Creek.
- Salem has a new tree ordinance for creeks.
- A Salem Sustainability Council deals with energy, water quality.
- Family friendly "ecozone" in Clackamas County; volunteer – neighborhood watch in Barton Parks distributes trash bags for residents.
- Clackamas River cleanups – during whitewater festival in May.

Response: Several, but not all, of these specific actions are included in the Plan. We didn't include every protection or restoration proposal or effort, but these efforts, even if small in size and modest in results, will contribute to overall recovery.

Comment: Chapter 9 is the most critical part of the Plan because it identifies actions. Where details can't be provided, describe the processes and key entities involved.

Response: We have included additional information in Chapter 9, but some of the processes will continue to evolve and we will take them into consideration during implementation.

Comments Pertaining to Costs

Comment: The Plan lacks significant information regarding costs and it isn't clear how we derived the costs we did include. It may not be appropriate to include all RPA costs as "baseline costs" when some may not be feasible. USACE recommends including costs of the RPA as cost of recovery because it will more accurately demonstrate the costs to the public to achieve recovery.

Response: Section 9.1.3 is titled 'Cost Estimates' and we acknowledge that they are, in some instances, only approximations, based on the information available. As explained in that section, we did not include all ESA-related costs, and this is true for other recovery plans for Columbia River species. We did not include the costs of the Federal Columbia River Power System, since we considered them to be ESA costs that were incurred under section 7 (a)(2) of the Act, not due to recovery plans.

Comments Pertaining to Implementation of the Plan and Adaptive Management

Comment: The timeline and project costs are, in many cases, vague, for instance "within 15 years." Provide more detailed timelines with specific target completion dates. If not added to the Plan, include in detail by the Implementation Team. The Plan should include more detail on the timeline for implementation and expected responses. When does the 25 year clock start - when the Plan is adopted, measures are initiated, the last action is initiated? Or do we mean it will take 25 years to implement the necessary measures, etc. The Plan should include target initiation and completion dates and the implementation timeline could be presented as a percentage of recovery actions to be implemented over time, possibly weighted by the importance of specific actions to recovery.

Response: In many cases we did not have sufficient information to provide detailed timelines; in other instances, we will include much more detail in the implementation schedule and we are now developing a tracking system to be able to report the percentage of recovery actions implemented. In Chapter 9, we discuss a 25 year time period which will start upon adoption of the Plan in 2011.

Comment: A plan is only as good as its implementation… hopes that the agencies will work closely together with stakeholders and funding organizations to successfully implement the Plan.

Response: We agree. Both NMFS and ODFW are committed to working with stakeholders and funding organizations, but the resources dedicated to implementing the Plan for each agency will depend in part on the annual funding levels.

Comment: The Plan should discuss what happens if targets are not met; there should be consequences for failure.

Response: We do not have the authority to require timely implementation of the actions in the Plan, but we will monitor progress and consider options if targets are not met in a timely manner.

Comment: Why do we think the Plan will be implemented?

Response: NMFS and ODFW are committed to implementing the Plan within the scope of their authorities and available resources, and numerous local, state and Federal agencies and non-governmental organizations have indicated their intent to support the Plan.

Comment: Is there a hierarchy in implementation?

Response: Yes. We intend to implement actions based on the priorities described in Chapter 9 to the extent possible, depending on available opportunities and resources.

Comment: IMST comments and recommendations on the Mid C and LCR apply. The Plan should include a more thorough description of the adaptive management process and a timeline for the development of an adaptive management plan. This should include information about how actions will be adjusted as new information becomes available. The Plan should explain how adaptive management will occur.

Response: Adaptive management is described in Section 9.3. We will include more details in the implementation schedule, which we will develop following adoption of the Plan.

Comments: Recommends a distinct adaptive plan for how NOAA intends to incorporate the emerging genetics data. Would like to see a distinct adaptive plan for how NOAA intends to incorporate the emerging genetics data identifying parent stocks, most urgently throughout the next two-three years. (e.g. dhow specific ESUs use habitat and at which life history stages.

Response: Action 10 in Table 9-1includes a genetic work group. We will work on this action as quickly as possible and incorporate new information into our strategies as it becomes available.

Comment: Explain how recovery plan will be updated to reflect new information. Will the Plan be revised on a regular basis as new information and tools become available?

Response: NMFS has national guidelines on how to modify recovery plans. Relatively minor changes can be accomplished with a 'plan update' whereas a 'plan revision' is required for a substantial rewrite or if major changes are proposed to the recovery strategy, objectives, criteria, or actions. A plan revision requires a formal process including an opportunity for public comment and publication of the proposed change in the Federal Register.

<u>Comments Pertaining Specifically to the Molalla River</u>

Comment: Molalla water temperature strategies - page 436 - is inappropriate.

Response: This comment referred to an earlier draft of the Plan; the final plan does not include this particular strategy.

Comment: Include the following recovery action for Molalla River spring Chinook and winter steelhead: "protect the highest quality habitats through acquisition or conservation easement measures." This will help the current efforts to protect the headwaters of the Molalla.

Response: We agree with this comment, and the Plan includes the following, pertaining to all the populations:

In simplistic terms the order of priorities for habitat actions is: 1. Protect and conserve *existing* high quality habitats and natural processes that support productive capacity. Protection of existing high quality habitats is one way to insure no net loss in habitat quality and is one element in the maintenance of normative ecological processes. Many habitat objectives are likely to be met through habitat protection and the associated natural recovery of upland and riparian areas. Land acquisitions, easements, cooperative agreements, and protective land designations are means to accomplish protection of high quality habitat.

Comment: LF for Molalla spring Chinook are accurate.
Response: Acknowledged.

Comment: Appendix E should but doesn't, contain the full reintroduction proposal for Molalla spring Chinook.
Response: Appendix E now has as better description of this proposal.

<u>Comments Pertaining to Nutrients</u>

Comment: The Plan should include consideration of nutrient enrichment of streams with salmon carcasses from natural spawning for salmon and wildlife benefits and harvest effects that can limit these benefits.
Response: At this point, lack of nutrients has not been identified as a limiting factor or threat, and there are no specific actions that include supplementing nutrients. Research is ongoing elsewhere, however, and we will follow any relevant developments and consider actions if the future if warranted.

Comments Pertaining to Outreach, Education and Partners

Comment: Expressed a major concern that public support is needed for the Plan and suggested simpler terminology and several specific actions.

Response: We agree with the general point made by this comment and many of the specific suggestions. We added a glossary, simplified terminology in a number of places, and developed recovery handbooks for local use.

Comment: The Plan suggests that NOAA intends to work directly with landowners: is this correct? If not, clarify.

Response: Yes, when possible. NMFS and the State of Oregon recognize the critical role for landowners in the recovery effort, including the National forests, local and state government and private landowners. We intend to work directly with landowners, but considerable efficiencies can be obtained if landowners work with organizations that are actively pursuing opportunities to participate in recovery efforts at the local level, including but not limited to watershed councils, soil and water conservation districts, other local groups, trade associations and environmental groups.

Comments: Multiple commenters volunteered or suggested others (including watershed councils, SWCDs, westside basins, landowners, local governments, etc.) as important partners in salmon recovery, describing: the importance of volunteer help; how the U.S. Forest Service will use the Plan as it implements actions consistent with its land use plans and authorities; why the Plan should recognize the work of OEB, MMT, HTT, PNEC and NGOs, particularly regarding the mainstem Willamette, including the "slices" framework and its contributions; why the UW stakeholder team should have included volunteers from Molalla and why they should be included in Implementation Team; why ODFW, NMFS and Governor's office need to be involved in encouraging other agencies and local governments to protect habitat (e.g. Lane County's recent efforts, Oregon Board of Forestry's decision to increase timber harvest); why NOAA and Salmon Safe could work together to target key growers in the Willamette; that the Willamette River Keeper has a very strong interest in finalizing the Plan and implementing it to reach recovery, is interested in being a key entity/implementer for monitoring for toxics and in habitat restoration projects/floodplain reconnection on the mainstem under Section 9 and would like to be on the Recovery Team for implementation as an NGO representative; and why the aggregate mining industry could be a major partner.

Response: We are encouraged by the expressions of support and interest, agree with these comments, and intend to coordinate with and include these and other organizations in the implementation of the Plan.

Comment: How are local groups like watershed councils represented in the Plan?

Response: Section 1.5 states in part: "Most of these actions focus on improving water quality and physical habitat quality and quantity. Watershed councils and soil and water conservation districts lead efforts in many basins." This section and Section 9.2 explain that NMFS and ODFW will rely on these and other local organizations to a great extent to implement the Plan. Table 9-1 includes watershed councils in those habitat actions.

Comment: ODA lost the position that supports SWCDs and they are concerned about how they will work with ODA now… WSCs are limited by lack of hydrologists, biologists, engineers, etc.

Response: We recognize the financial challenges facing numerous partners in the recovery effort. We will do all we can to support these and other groups; improving the level of communication and coordination may offer some efficiencies and support.

Comment: Work with Oregon League of Cities, water utilities, meet with nursery folks; homebuilders, others; do newsletters. Make the messages simple and tailored for audiences.

Response: We agree, and intend to work with watershed councils, soil and water conservation districts, and others to in the Willamette Valley.

Comment: A number of comments suggested the importance of education and outreach to the public; others explained why this program is in the public interest and expressed concerns that public support is needed for the Plan. Several asked how the public will be kept abreast of the project and local aspects of the projects and suggested actions, including:

- development of a supporting document aimed at educating and explaining to the public why this program is in the public interest;
- one or more workshops after the Plan is final to let people know what resources are available and what actions are needed; and
- progress reports for journalists, local government entities, interested public, etc.

Response: We agree. We will provide handbooks explaining the Plan for key subbasins in the Willamette Valley, and we will continue to develop additional educational materials and work with other groups that have related efforts.

We also intend to work with watershed councils to ensure coordination, education, and outreach and to facilitate public involvement. Section 1.5, Relationship to Other Planning Efforts, describes this in general terms. Table 7-2 describes strategies relating to education and outreach, and Table 9-1 includes actions to enhance education and outreach. NMFS and ODFW will continue to work with all our partners to educate, involve, and work with the public and all interested groups.

Comment: Add or delete BLM as a key entity in a number of actions.

Response: We added BLM to a number of actions and deleted BLM from one in Table 9-1 as requested.

Comment: The Plan suggests that NMFS intends to work directly with landowners: is this correct? If not, clarify.

Response: NMFS intends to support efforts in the private sector that are consistent with recovery and will work with landowners whenever and wherever possible to promote implementation of the Plan. However, in a number of respects landowners may find the most effective support is available from local groups such as watershed councils, extension offices, etc. NMFS encourages as much cooperation and communication between interested parties as possible.

Comment: Call out restoration organizations such as Salmon Safe, Watershed Councils, and SWCDs and provide incentives for them to work with landowners within high priority areas.

Response: We have not specifically identified all the organizations involved in protecting and enhancing the Willamette River ecosystem, but we do recognize the extremely valuable role that they can perform, and understand that achieving recovery will not be possible without the contributions and support of landowners and numerous non-federal organizations.

Comment: Was ODA part of the stakeholder team? What is the role of ODA in recovery and how is it going? ODA lost the position that supports SWCDs and they are concerned about how they will work with ODA now. WSCs are limited by lack of hydrologists, biologists, engineers, etc.

Response: The ODA was not a formal member of the stakeholder team, but ODFW and NMFS expect to work closely with ODA on issues related to the work ODA does that also affect recovery.

Comment: Are the Federal agencies involved, and will this really be an organizing tool for them?

Response: Yes. A number of Federal agencies have responsibilities in the Willamette, including but not limited to the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers (USACE), Bonneville Power Administration (BPA), Environmental Protection Agency, Natural Resources Conservation Service and the Bureau of Reclamation. These agencies coordinate in a number of forums and they will take the Plan into consideration in the future.

Comment: Is there a buy-in from hydro? What kind of buy-in?

Response: The Willamette Flood Control Project, 13 dams operated by the USACE, is the subject of a NMFS BiOp issued in 2008. The USACE, BPA and NMFS; along with ODFW and others, are in regular contact regarding implementation of this BiOp. We understand that all these agencies are supportive of the Plan and will work with the state and NMFS to help implement it, consistent with their authorities and available resources.

Comment: Santiam FlyFishers would like to be plugged in to implementation - how can they do that?

Response: There will be multiple opportunities to engage in the recovery efforts. The North and South Santiam Watershed Councils and other non-governmental organizations, local soil and water conservation districts and other local government-related efforts, ODFW and NMFS will all be involved to some extent.

A number of comments encouraged broad participation, including: We should include SWCDs in implementation; we should work with the Oregon League of Cities and water utilities; meet with nursery folks, homebuilders and others; provide newsletters, make the messages simple and tailored for multiple audiences, and establish new partnerships with Soil and Water Conservation Districts, watershed councils, and counties.

Response: We agree, and intend to work with all the organizations mentioned throughout the recovery effort, along with pursuing partnerships with government agencies at all levels, and encouraging non-governmental organizations to be active partners with ODFW and NMFS.

Comments: What is the reporting responsibility to make sure the public has the information to track progress toward recovery? There is little indication of how the public will be kept abreast of the project and local aspects of the projects – this is a deficiency that should be addressed. There should be a workshop or more after the Plan is final to let people know what resources are available and what actions are needed. Progress reports should be available to journalists, local government entities, interested public, etc.

Response: NMFS and ODFW will jointly take responsibility for tracking progress toward the recovery goals and keeping the public informed about the recovery effort. We are developing the details of both the tracking and reporting efforts, and will utilize our websites, the network of participating organizations, and other means to inform the public of progress as we implement the Plan.

Comments Pertaining to Predation

Comments: The Plan does not adequately address predation, especially by sea lions. This is important in order to ensure support from anglers, who are concerned about sea lion predation. The Plan will fail because of sea lion predation; ODFW should do its job. The Plan doesn't place enough emphasis on mammal and avian predation: it is critical that we aggressively address this "needless source" of mortality for these stocks. The Plan doesn't recognize avian predation further upstream in the Willamette.

Response: We disagree with these comments. While predation by sea lions and seals is one source of mortality for Willamette and Columbia Basin salmon and steelhead, it is not, at this time, considered a primary threat to recovery of these species. The Plan describes key and secondary threats, and NMFS and ODFW continue to monitor the seal and sea lion predation, but the Marine Mammal Protection Act and ESA prevent the unauthorized removal of those animals. The challenge of managing an increasing number of protected animals is likely to become more difficult in the future.

Comment: Under "Other Species Management" the recovery plan states "that increased rates of predation are associated mostly with alterations of stream and estuarine habitats." Suggest adding, *"and past management decisions to introduce exotic species and the uncoordinated actions of individuals"*. Please see "The Coming of the Pond Fishes" by Ben Hur Lampman (Binford and Mort, 1946) for a history of management decisions surrounding the introduction of exotic species into the Willamette River.

Response: Acknowledged.

Comments Pertaining to Prespawning Mortality

Comments: The Plan should provide information on pre-spawning mortality in the Willamette below dams and in other systems. Enhance search for causes of high pre-spawning mortality for Chinook. Consider these references on the importance of mature adults in recovery and explain

our rationale for not placing a strong emphasis on prespawning mortality as an important viability factor: A. Gallucci et al 2006, MacArthur 1960, and Wallace et al 2008.

Response: We agree that pre-spawning mortality is a primary concern for Upper Willamette spring Chinook, and Chapter 5 explains this. Multiple actions in Table 9-1 target factors that appear to contribute to pre-spawning mortality, including water quality. NMFS, ODFW and several universities continue to work on searches for causes, and we intend to intensify this search, including these and other references in our work.

Comment: Do the CATAS and SLAM models include the extremely high pre-spawning mortality and do they reflect the importance of reproductive value in the mature adult life history stage?

Response: The short answer is yes. Here is a longer answer, quoted from Appendix B, Conservation Assessment Tool for Anadromous Salmonids (CATAS) Description: "Our approach was to use spawner and recruitment observations for the McKenzie population as a basis from which to estimate the recruitment character of those populations for which we had very little data. We accomplished this by adjusting three equation scalars within the recruitment models such that the assumed differences between the 'no data' population and the McKenzie in terms of habitat capacity, pre-spawning mortality, and intrinsic productivity were compensated for. In other words we adjusted intrinsic productivity, habitat capacity, and density independent survival such that the recruitment dynamics of the McKenzie population would match those of the target basin."

Comment: Recommends including "placeholder language" that addresses land management agencies' concern that recovery plans are being finalized but were not describing out-of-basin threats (hatcheries, harvest, hydro) at the same level of detail or with similar emphasis on commitment as with habitat.

Response: We have added this disclaimer language to the front of the Plan.

<u>Comments Pertaining to Research, Monitoring and Evaluation (RME), Data Gaps and Uncertainties</u>

Comments: We received numerous constructive suggestions from the public, IMST and various organizations regarding research, monitoring, evaluation, data, data gaps and uncertainties:

- Data are often more limited than is desirable, but the Plan calls out these "holes in the data"; early implementation should allocate resources to fill the data gaps.
- Keefer et al 2010 notes lack of information on non-harvest mortality in migratory corridor and spawning grounds.
- The Plan should require an RME strategy in the Calapooia to determine the relative success of the proposed approach, which is to let natural seeding occur and improving habitat.
- The Plan should evaluate existing conservation management programs in the Molalla and Calapooia Rivers.
- A better RME program is needed to tell how well the Molalla steelhead plan is working. Determine the life history diversity of this population, estimate progress towards recovery, and assess the program: at a minimum there should be a smolt trap to count juveniles, determine migration patterns, size.

- Adults should be counted, destination, run timing, age, sex ratio, potential egg deposition, size range, and genetic characteristics.
- The authors should estimate the minimum amount and quality of data required to increase confidence in inferences made from model results. How much additional data must be produced before model results can be interpreted with high level of confidence? The recovery plan should acknowledge the need for data on fish and fish habitat to be standardized. The plan fails to identify strategy to integrate BiOp RME with others. The plan fails to provide clear approach to assess action effectiveness and LFTs. The Plan isn't clear how it will stratify the design of monitoring. The plan can't discern if the problems are above the dams, in the lower tributaries, or mainstem Willamette.
- The plan fails to identify strategy to integrate BiOp RME with others.
- The recovery plan should acknowledge the need for data on fish and fish habitat to be standardized.
- Accurate monitoring is vital to prioritizing efforts.
- There has been good work on establishing the ESU and DPS and their related sub populations, but further analysis of the genetics of sub populations could lead to more beneficial actions by tailoring actions to the needs of fish in subbasins.
- The Plan should identify the need for data organization and highlight the "slices" framework as a potential solution to this problem. OWEB is seeking partners to support this work.
- Clear need to track progress, monitor and to work toward all parties doing their part.
- The Plan should require an RME strategy in the Calapooia to determine the relative success of the proposed approach, which is to let natural seeding occur and improving habitat.
- status and trend monitoring should include metrics of hatchery fish.
- Commenter agrees with observation that UWR Chinook contain unique genetic resources; an effort to fund additional study in this vein is important.
- The Plan should evaluate existing conservation management programs in the Molalla and Calapooia Rivers.

Response: We agree that there are numerous data gaps and research opportunities relating to Upper Willamette Chinook salmon and steelhead. The Plan calls for additional work, in Chapter 8.We have strengthened the Plan in terms of basinwide prioritization and coordination of RME (see the Executive Summary and Chapter 8).

We agree that there is a need to standardize data to a much greater degree, and there is a need for an integrated research, monitoring and evaluation plan. This important issue has been the subject of extensive work recently in the Columbia Basin with state, tribes and federal agencies, but will require a long term effort to obtain useful answers regarding the impacts (+ or -) at the population level. In Section 8.5.1, the Plan describes development of integrated monitoring plans:

Each year millions of dollars are spent to monitor the status and trend of natural resources and determine the effectiveness of restoration programs in the Pacific Northwest. While there is increasing consensus among regional federal, private, state, and tribal organizations with respect to the need for integrated and standardized monitoring information, funding for

these activities is stagnant or declining. As a result, there is an increasing need to improve the efficiency and cost effectiveness of monitoring programs.

We also agree about the benefits to be gained by standardizing data collection and accessibility, and we are working with partners throughout the region on this enormous and challenging task.

Comments: Available science and monitoring resources needed to determine current status, desired status and conservation gaps are incomplete or entirely deficient for many populations. Acknowledgements of data gaps are well presented, but this uncertainty is part of the risk that populations and species might go extinct despite efforts. Additional descriptions of uncertainty would strengthen the Plan: 1. The Plan should discuss how uncertainty in ranking 4 H LFTs relates to uncertainty in ranking ocean conditions, climate change and human population growth and should use similar treatments (e.g. quantitative models) or explain why it doesn't.

Response: We agree with this comment. We plan to include the recommendations of the IMST in our ongoing implementation, to the extent possible, and we will continue to coordinate and work with the IMST and other scientific groups. We agree that the "slices" framework (developed by the University of Oregon and Oregon State University) is an extremely useful approach to collecting and organizing data for the Willamette River. We plan to incorporate that into the ongoing assessments associated with ESA recovery to the greatest extent possible.

Comment: Winter steelhead should be counted at Willamette falls as one runtime, not two.

Response: This is an interesting suggestion, but there are some practical challenges to doing this effectively. First, we would need to relate the data to historical conditions, but early-run steelhead were, for some time, hatchery origin, not natural origin. Second, we would have to make sure we weren't counting late summer runs. We will consider this as a possibility in the future.

Comment: The Plan should present the number of juveniles entering the ocean per population or species and the projected numbers of juveniles necessary to achieve viability. These numbers could be discussed in terms of the successful spawners produced and the feasibility of accomplish this with the proposed recovery actions.

Response: We appreciate this comment, but accurate counting of juveniles is not very practical. Given the number of spawners, we can estimate the number of juveniles and check that by trapping some juveniles, but in general, we expect to estimate the number of juveniles based on the number of spawners.

Comment: Can you genotype fish at the falls then haul them to their destination?

Response: In theory, yes, but in practice, this would take an enormous amount of effort, handling thousands of fish and subjecting them to increases stress and injury. We have not included this as a recovery action at this time.

Comment: Constant change of scientific information doesn't sit well with the public.

Response: We understand that frequent changes in the latest scientific information can be frustrating, but we expect research, monitoring and evaluation to continue to shed new light on the complex issues associated with salmon and steelhead recovery.

Comment: Add diseases, treatment, mortality numbers, and actions etc. to the list of issues that annual reports should cover.

Response: To the extent we have this information, we intend to include it in future reports.

Comments Pertaining to Risk

Comments: A number of commenters offered suggestions regarding treatment of risk, including:

- Our aggregation of risk greatly decreases transparency of the analyses of current status, desired status and conservation gaps. Figures should more clearly portray the range of variability in risk within and among populations - use continuous probability rather than categories.

- The Plan should have an explicit description of the empirical basis for assigning extinction probabilities to risk categories.

- The Plan should present change in probability of extinction risk required to meet desired status in summary table form, in order to better reflect the magnitude of effort required to recovery populations as well as the uncertainty involved in doing so.

- The Plan should consider estimates of the risk reduction potential and costs of classes of actions populations and species,

- The Plan needs to be clarified regarding risk analysis (Table 4-3, p 62): it isn't clear what values are taken into account and there's no indication that these values are related to historic abundance and biological values for each population. It is therefore impossible to determine if the values in the baseline are shifting or if they represent the diversity of the historic populations. Table 4-4: low risk metric has no real meaning; Low risk must be based on a metric that includes sufficient habitat. Table 4-4 low risk category assumes that <10% hatchery influence and <25% harvest rate is sufficient to secure low risk. This needs more verifiable information. This low risk category ignores the best available science regarding harvest and hatchery influences on a population and it's compounded by not being based on its historic abundance and biological attributes.
-
- It isn't clear how the break points in the range of extinction probability values were determined and assigned to risk categories. The definitions of extinction categories aren't consistent - they are non linear. Reconsider the numeric break points and consider continuous scoring instead of class scoring.

Response: The series of scientific papers that we relied upon as the foundation for the Plan offer the best responses to these comments. We direct readers to the series of McElhaney et al papers cited in the reference section at the end of this response to comments. Please contact Rob Walton (rob.walton@noaa.gov) for further information.

Comment: It appears that the Plan attributes too much capacity for risk reduction to tributary habitat. Improving freshwater capacity will have a positive effect only to the degree that the ocean is not limiting and the hatchery/harvest mortality doesn't preclude full seeding of the tributaries. The Plan should explain the scientific basis for the heavy focus on tributary habitat actions.

Response: As explained in the Plan, the risk reduction attributed to habitat is intended to be approximate, not precise, and we will revisit those estimates in the future. Without precise information to guide us at this point, we think it is a reasonable assumption that degraded freshwater habitat has contributed to overall decline of the populations, and our basic strategy is to attempt to reduce threats in all sectors as we are able, using adaptive management to adjust strategies as new information becomes available.

Comment: The Plan should: a) explicitly define key and secondary factors and apply them consistently across populations; b) explain how 'consensus opinion' was used to differentiate between threat categories; c) explain when cumulative effects of secondary factors equal primary factors; d) explain how we will address cumulative effects of secondary factors; e) explain how uncertainties of LFTs were considered during the ranking process and whether they were applied equally across all factors?

Response: We have provided greater detail on how LFTs were ranked and the associated uncertainty, included an appendix describing the consensus approach, acknowledge in the Plan that multiple secondary factors can act cumulatively, and have crafted a comprehensive suite of actions that work across several LFTs.

Comment: Why aren't hatchery/wild numbers released to the public (on the ODFW website)? Many fish counting stations release numbers by total of hatchery and wild but Willamette Falls only releases totals.

Response: We will look into opportunities to provide greater detail in reporting fish composition at Willamette Falls.

<u>Comments Pertaining to Uncertainties</u>

Comment: the credibility of the Plan is enhanced by acknowledgement of scientific uncertainties and unknowns.

Response: We agree. Given the substantial number of scientific uncertainties associated with recovery of salmon and steelhead, we intend to pursue key research opportunities throughout the recovery efforts.

<u>Comments about Uncertainties</u>

- The authors should discuss or model how compounding assumptions, errors and uncertainty may multiply regarding current status, conservation gaps and responses to actions, with one or two recovery scenarios, especially for scenarios with least confidence.

- The Plan should discuss how uncertainty associate with current model scenarios and expert opinion influences expectations for performance of actions, implementation or development of adaptive management strategy.
- The Plan should examine how LFs might change under the most commonly agreed scenarios, such as identifying salmonid populations that may be vulnerable to these threats and hypothesize about how key or secondary threats might change and how recovery actions might be prioritized or implemented differently with changing climate and growing human population.
- We should run the CATAS models without the conservation buffers to provide estimates of recovery based on what is currently known, and we should review recent approaches to incorporating uncertainty into forecasts such as the Millennium Ecosystem Assessment.
- Consider three peer-reviewed references regarding uncertainty: Fuller et al 2008, Heller et al 2009 and Vos et al 2008.

Response: These include numerous constructive comments. We will consider them as part of a multi-organizational, coordinated process to consider RM& E priorities, given revised priorities and available resources

Comment: It isn't clear how well CATAS and SLAM predict status of real populations - have they been validated using historical to current conditions with reasonable start year and similar assumptions? The Plan should discuss this.

Response: We used CATAS and SLAM to inform our assessment of the relative impacts of different recovery strategies, not to predict population status. This is explained in Chapter 6.

Comment: The adjustments for uncertainty are applied equally across all populations but it may be disproportionately affected by human population growth and/or climate change.

Response: We agree and will consider this in future analyses as additional information becomes available.

Comment: There is a tremendous amount of uncertainty in the threat reduction scenario analysis. This needs to be explicitly recognized. If fish numbers are used as goals, with the expectation that habitat can fill the gap, after the other Hs, some 'range' of outcomes should be used, with a range of potential habitat improvements needed.

Response: We agree, and clarified this uncertainty in the final plan.

VIII. QUESTIONS ABOUT THE PLAN

Comments: Are there plans to protect fish at sea? Ocean effects are a black box. Why are ocean effects not being addressed?

Response: The ESA requires federal fisheries managers to consult on the effects that ocean harvest has on listed salmon and steelhead. See the NMFS Northwest Regional website for more information: http://www.nwr.noaa.gov/Salmon-Harvest-Hatcheries/Salmon-Fishery-Management/Index.cfm. The health of the ocean ecosystem is a much broader and more difficult challenge. NOAA's Northwest Fisheries Science Center and others are increasing the amount of research on acidification and other potential threats to salmon and steelhead. We will update the recovery effort as appropriate when new information is available.

In terms of ocean health, including acidification, the Northwest Fisheries Science Center (NWFSC) is participating in a number of scientific research efforts to monitor potential effects on salmon. See the NWFSC website for more information: http://www.nwfsc.noaa.gov/.

Comment: Can you explain and discuss the cumulative mortality equation?

Response: Section 6.2.1 in the Plan describes the concept and application of the 'cumulative mortality expression.' ODFW staff led the development of an equation that takes estimates of mortality in a number of subcategories of threats and multiplies them together to get an estimate of the total mortality rate for a given population. The result is the cumulative mortality rate due to human activities that we used to calculate the difference between a population's modeled current abundance and an estimate of abundance prior to the 1800s (the historical abundance). This methodology is only as strong as the assumptions that went into it and there are significant uncertainties involved, so we have taken the results as informative, but not determinative, in our analysis of recovery scenarios.

Comment: How will the recovery plans for LCR and UW be integrated sufficiently to lead to recovery in both regions? Will the Clackamas actions from the LCR be included and vice versa?

Response: NMFS and ODFW staff working on salmon and steelhead recovery have worked together in developing the recovery plans for the Upper Willamette and Lower Columbia Rivers, and will continue to coordinate closely in all aspects of implementing the recovery plans.

Comment: How old are the out-migrants?

Response: Upper Willamette Chinook salmon migrate out of the basin both as sub-yearlings (less than one year old) and yearlings (in their second year).

Comment: The Plan should consider these questions:

a. What confidence do we have that the population structure defined in the Plan will facilitate recovery?

b. How might low confidence in some population boundary determinations affect current status and viability assessments?
c. Are there alternative population structures with strong biological support? if so, how might they affect ability to reach viability?

Response: The population structure was based on work done by the WLCTRT and we've accepted that structure; now we are focusing on strategies and actions to facilitate recovery for the entire ESU and DPS. Our confidence, or lack thereof, in the population boundary determinations will not have a significant affect the recovery effort. The WLCTRT did consider alternative population structures and provided rationale for the current structure.

Comment: Why doesn't the government mandate outflows from industry, etc?

Response: The Oregon Department of Environmental Quality and the Federal Environmental Protection Agency are responsible for implementing state and Federal water laws, many of which do apply to industry and other sectors of our economy.

Comment: Are cigarette butts and other litter a problem?

Response: Litter can definitely be a problem for the environment, but in general, this is not a major threat to salmon and steelhead.

Comment: Do pharmaceuticals have an impact on fish?

Response: Yes. A number of studies have identified growing amounts of pharmaceutical compounds in our waters. The Northwest Fisheries Science Center and other organizations have identified this as an important emerging threat. Considerable research will be needed in order to determine the potential effects and establish thresholds for ensuring that we avoid adverse impacts to listed species.

Comment: What more should counties do in addition to factoring in TMDLs in their plans?

Response: County governments can plan an extremely important role in the recovery effort. One general suggestion is that county governments could work with various agencies that have jurisdiction to review their ordinances in order to ensure that they are adequate to protect river health and not contribute to further degradation of salmon and steelhead habitat.

Comment: How bad is it to have golf courses near the river?

Response: Golf courses are not by themselves "bad" for salmon, steelhead and the ecosystem. With proper use of chemicals, buffers, and other activities, they can be good neighbors to fish habitat.

Comment: How big a problem is predation in the Willamette? Squawfish, warmwater fish, sea lions… what is being done? Don't other species have a higher rate of impact?

Response: Chapter 5 describes predation by various species as a limiting factor, including Tables 5-1, 2, 10 and others that follow. Chapter 6, Table 6-3 discusses predation actions in the recovery scenarios. Chapters 7 and 9 include specific strategies and actions to reduce predation. Among the species that prey on salmon and steelhead, migratory birds and marine mammals (pinnipeds) are also under Federal protection, which creates a long-term 'ecosystem-based management' challenge.

Comment: What about Willamette coho? Is the presence of coho above the falls an important threat? Should they be allowed over the falls?

Response: At this point, the growing population of (unlisted) coho salmon in the watersheds in and around the Yamhill and Tualatin Rivers is not considered a threat to spring Chinook salmon or steelhead. NMFS and ODFW will continue to monitor and study this issue, however since competition between the species could conceivably become an issue of concern.

Comment: Clarify Appendix D. What are the assumptions that went into SLAM?

Response: The Species Life Cycle Analysis Modules (SLAM) is a tool for modeling life-cycle dynamics. Designed for rapid exploration of alternative life-cycle structures and stage transition assumptions, the program can be used to evaluate the population consequences of proposed management actions that affect survival and capacity of specific life stages. The application of this tool is complex; if interested parties would like to understand more details than are contained in Appendix D, we invite them to contact Rob Walton (rob.walton@noaa.gov or 503 231-2285) to arrange a briefing.