

Appendix A

**Comments of the Columbia River Inter-Tribal Fish Commission
Regarding the NOAA Fisheries' September 8, 2004 Draft Biological Opinion
For Operation of the Federal Columbia River Power System
October 8, 2004**

I. GENERAL COMMENTS

The Columbia River treaty tribes have long expressed their concerns and frustrations regarding the federal government's failure to fairly allocate the burden of conserving salmon. NMFS' biological opinion on the tribes' 2000 winter, spring, and summer fisheries acknowledges the voluntary sacrifices the tribes have already made:

[T]he state and tribal parties to the CRFMP [and presumably the United States] recognized thirty years ago that the kind of harvest rates that were in place at the time could not be maintained and took action to reduce harvest levels to what were arguably very low levels. During the mid-80's when the Plan was being developed, the parties made a more explicit determination about the level of harvest that was appropriate and acceptable during what presumably would be a rebuilding period.... Unfortunately, the status of the natural-origin spring and summer stocks has not improved despite over thirty years of very conservative harvest management.¹

What NMFS does not say is how it, the Action Agencies, and federal land managers all fully cognizant of the depressed status of these fish runs, failed (and continue to fail) to implement even remotely commensurate reforms to address the vast majority of the salmon mortality over which they preside. As a consequence, despite decades of very conservative harvest management at great social, cultural, and economic cost to the tribes, the runs continued to decline to the point that NMFS began listing upriver salmon, beginning with Snake River sockeye and spring, summer, and fall chinook. It has become very clear that throughout this time, the tribes, their treaty-secured property right to take fish, and the salmon have been suffering the consequences of state and federal resource management decisions that have been largely indifferent to the sacrifices of the tribes and the biological requirements of salmon.

The July 21, 1998 letter from Assistant Secretary Terry Garcia to the Columbia River Inter-Tribal Fish Commission promised more. Attachment 13. In that letter Mr. Garcia announced that "the recovery of salmon populations must achieve two goals; 1) the recovery and delisting of salmonids listed under the provisions of the ESA; 2) the restoration of salmonid populations, over time, to a level to provide sustainable harvest sufficient to allow for the meaningful exercise of tribal fishing rights." To this end, Mr. Garcia notes that "we achieve a steady upward trend toward ESA delisting in the near term...." As discussed below, NOAA has abandoned the upward trend toward ESA

¹ See National Marine Fisheries Service, Northwest Region, Biological Opinion: Impacts of Treaty Indian and Non-Indian Year 2000 Winter, Spring, and Summer Season Fisheries in the Columbia River Basin, on Salmon and Steelhead Listed Under the Endangered Species Act 54 (Feb. 29, 2000)("Spring 2000 BiOp").

delisting and is now apparently satisfied in simply assuring the FCRPS imposes no “net effects”. The BiOp has evolved to a hydro plan disguised as a salmon plan.

Judge Redden’s May 2003 remand order addressed two issues: the lack of certainty (or consultation for federal actions) regarding mitigation actions relied upon by NOAA Fisheries in the Reasonable and Prudent Alternative (RPA), and the scope of the action area defined in the 2000 BiOp. Rather than go back and fix these problems, NOAA has completely revised the approach and analysis used to review the effects of the operation of the FCRPS. NOAA’s new approach is not only a new method of analysis, it also relies on an entirely new foundation for what effects are even considered in its jeopardy analysis, and more importantly, a new and lowered “jeopardy standard” to be applied in the analysis. NOAA’s “gap analysis” and use of a reference operation now ignores the significant mortality acknowledged in the BiOp to be caused by the hydrosystem. This new framework radically deceases the “Effects of the Proposed Action.” No longer is NOAA on a path for assuring survival and recovery as had been the definition in the 2000 and prior BiOps. The result: after years of jeopardy determination on the FCRPS, NOAA has reached a no-jeopardy determination even though the operations remain basically the same and past insufficient mitigation has, in fact, been substantially decreased. Rather than address the concerns of the court, NOAA has devised a way to circumvent those concerns through changes based on policy rather than science.

The new Draft BiOp also differs significantly from the 2000 BiOp in the degree of accountability imposed on the Action Agencies. The 2000 BiOp’s requirement for a “back-up plan” including the potential for removal of the Snake River Dams is now completely off the table, and no other method for accountability is put in it’s place. Moreover, the actions proposed in the UPA are extremely vague and rely on “performance based adaptive management”, and accordingly based on a flawed computer model not developed for this purpose. Mitigation actions are not adequately described, and there is no accountability or assurance that actions will be performed or that they will meet up to undefined performance measures arbitrarily assigned in the future. The Draft BiOp suggests that if actions do not work out as assumed, then the agencies will have to re-consult. The proposed action suffers from the same uncertainties that the court ruled illegal in the 2000 BiOp, yet this time there is no back-up plan.

Underlying and compounding the uncertainties of the proposed action is NOAA Fisheries nearly exclusive reliance on qualitative analysis in its determination of the effects of the action. Each decision outlined on the framework’s decision tree (with the exception of estimating the survival effects of the reference and proposed hydro operations) is “qualitative.” The analysis essentially utilizes an “expert judgment” approach, however the process does not have process rigor with regard to expert judgment, e.g., selection of experts, documentation of judgments, etc., not to mention the “experts” consist of only NOAA staff.

Additionally, general comment, we note the Draft BiOp mentions and defers analysis of the proposed action for adverse modification of critical habitat due to the recent court case *Gifford Pinchot Task Force v. United States Fish and Wildlife Service*. We are

unable to fully comment on this issue at this time because, like NOAA, we have just recently been presented with this case and have not had the time to analyze and decipher its implications. Like NOAA, we have been focusing on this new Draft BiOp and the altered jeopardy standard that came with it.

II. NEW FRAMEWORK & CHANGE IN JEOPARDY STANDARD

• Change in previously mutually accepted goal

NOAA Fisheries' Draft BiOp represents a dramatic departure from its 2000 and earlier BiOps. Previously, the co-managers shared a common goal with respect to jeopardy analyses: determining the probability of survival and recovery within specified time periods. In the 2004 BiOp, NOAA's goal is to attempt to assure that the increase and decline are not included for the listed stocks. Thus, the fact that a stock is in decline, even steep decline, never enters the jeopardy equation. The change in goal has been accompanied by abandonment of what previously were mainstays of a jeopardy assessment: the establishment of survival and recovery goals and determination of the probability of meeting those goals under alternative management scenarios. Although the Tribes did not agree on the recovery goals established by NOAA in the past, the abandonment of all such goals represents a substantial setback in salmon restoration. Appendix B to these comments discusses these changes in NOAA policy in greater detail and in the context of its prior biological opinions on the FCRPS.

• Metrics and Criteria Useful for Assessing Jeopardy Standards

In the 2000 BiOp, NOAA defined its "jeopardy standard" to be met if the mortality attributed to the hydrosystem was below a level that, when combined with mortality occurring in other life stages, still results in a high likelihood of survival and a moderate to high likelihood of recovery. In the 2000 BiOp, NOAA used several metrics and criteria to assess whether the FCRPS would meet this jeopardy standard.² These included:

- a. Survival:
 - risk of absolute extinction (one fish over generation) within 100 years
 - 5% risk of absolute extinction is high likelihood

² As noted above, the plaintiffs and amici Tribal co-managers in NWF v. NMFS challenged the use of these metrics in addition to the plaintiffs' claim that the BiOp violated the ESA's regulation barring consideration of non-federal actions that are not "reasonably certain to occur" or federal actions that had not yet undergone formal section 7 consultation. The Court did not reach the parties' claims with respect to NOAA's use of these metrics.

b. Recovery

- Likelihood that the 8 year geometric mean abundance of natural spawners in a population will be equal to or greater than an identified recovery abundance level.
- Recovery abundance not identified for any ESU – have some preliminary
- In mean time, rely on combination of survival criterion and an alternative recovery criterion = to the level of improvement needed in the productivity to result in a median annual population growth rate (λ) greater than 1.0 over 48 years.

The draft 2004 BiOp purports to invoke VSP criteria as part of the jeopardy determination. Yet in the guise of “net effects” analysis, the BiOp abandons any meaningful considerations of population trend around which questions of viability revolve. It is patently counter to the fundamental precepts of conservation biology to accept that while a stock may have a downward trend that such a trend does not bear upon viability, i.e. the likelihood of survival and recovery. NOAA’s rationale for its unwillingness to perform trend analyses is apparently the perception that the law prevents the action agencies from basing forecasts on actions over which they have no discretion. Even this perception, however, should not prevent NOAA forecasting time to extinction, which NMFS did in the 2000. Such an analysis would at least demonstrate what would happen if no actions are taken.

• **The magnitude of FCRPS mortality overlooked by this biological opinion is astounding**

The management implications of the new jeopardy standard and framework for analysis are dramatic. With no plan for recovery, or even survival, the productivity increases identified in the 2000 BiOp for listed stocks to meet the jeopardy standard have all but disappeared. For example, the survival gap for Snake River spring/summer chinook is 1.5% relative difference (2004 BiOp Table 6.7). By contrast, the survival improvement needed for this ESU to achieve a 50% probability of recovery in 50 years under the 2000 BiOp was, on average, approximately 40% (2000 BiOp Table A-5). The comparable numbers for Snake River fall chinook are 14% versus 114%, while those for Upper Columbia spring chinook are 64% versus an average of 129%. Notably, where in the 2000 BiOp, action was necessary to assure that the survival increases would be met, in the Draft BiOp, the relative differences just need to be analyzed for determination if their affects are “appreciable.”

Moreover, gap analysis seriously understates the impacts of the FCRPS on listed stocks. For Snake River spring/summer chinook, the allowable take (gap) is 1% (Table 10.1) whereas the more realistic FCRPS mortality is identified as 56% in the second set of tables (a combination of juvenile and adult mortality; in Tables 10.3 and 10.4.) Worse, the BIOP ignores delayed mortality. Intensively reviewed research indicates that the

direct and delayed hydro system mortality of Snake River spring/summer chinook may be, on average, approximately 80%. Thus the mortality expressed in the second set of tables as 56%, should actually be 80%. Yet there is no mention of anything but direct mortality in the allowable take statement. Compared to the allowable take or gap of 1% NOAA is forgiving approximately 98% of the mortality attributable to the FCRPS regardless of whether one accounts for delayed mortality ($0.8 - 0.01/0.80 = 0.981$) or not ($0.56 - 0.01/0.56 = 0.982$). As these numbers indicate, by removing the goal of recovery in the jeopardy standard and looking only at “net effects”, NOAA has drastically reduced survival expectations from the FCRPS.

The hydrosystem and its continuing effects are thus “buried” by NOAA’s new jeopardy framework and do not play a role in NOAA’s jeopardy evaluation. NOAA cannot assume that dams do not continue to have adverse effects on salmon and steelhead. Including something in the baseline is not an excuse for removing that action’s effects from the agency’s analysis as NOAA seems to be suggesting in this framework.

- **The framework fails to consider the status of the species up front**

The analytical effort undertaken by NOAA in implementing the new framework started (and ended) with an artificial construct; the reference point within the action area where all discretionary actions favorable to salmon have been taken at the dams. Prior analyses have adhered to the five-step process articulated a decade ago and started with an examination (quantitative) of the status of the species. Such an analysis to determine the status of the entire listed salmon ESU is an essential first step because it allows the agency to evaluate the effects of the action (which includes the environmental baseline) and any cumulative effects in perspective. It requires the agency to determine, even before evaluating a proposed action, whether, for example, the status of the species is so poor that there is no more “room” above the jeopardy threshold to accommodate any adverse effects from a proposed action. Because that determination is not the starting point in this framework, however, we do not see how this and other crucial questions (such as existing and projected population trends) can be made. NOAA Fisheries has ignored this critical starting point and only focused on the latter stages of jeopardy analysis.

- **The framework seeks to only maintain current population trends**

As it stands, the framework only questions whether the proposed action will harm survival by making the status quo any worse. A no-jeopardy determination will be given so long as the action does not accelerate the trend to extinction, and may be given even if it does just so long as the acceleration is not “appreciable”. This approach excludes notions of “conservation” under the ESA by not addressing the concepts of survival and recovery and is contrary to the approach NOAA followed in the 1995 and 2000 FCRPS BiOps and follows in other opinions for other actions affecting listed salmon.

III. CURRENT STATUS

NOAA Fisheries states in this section, and we agree, that the temporary increases in stock abundance might be temporary and could mask a failure to address the underlying factors for decline. Unfortunately, NOAA Fisheries fails to take this perspective of a precautionary principle throughout the rest of the draft Opinion. NOAA Fisheries states that it is not certain how populations will fare under poor ocean conditions with degradation of riverine, near ocean and estuary habitat. Nickelson and Lawson (1998) demonstrated that salmon populations in reaches of poor freshwater habitat became extinct during periods of low marine survival, while populations in good freshwater habitat declined but were able to maintain a level of productivity in the face of low marine survival. *See also* Appendix B, *Comments on Ocean Conditions and Flows*. In the draft BiOp, NOAA Fisheries disregards the risk of extinction in poor marine survival periods and appears willing to squander the current high productivity rates from good marine survival that otherwise would increase productivity in previously underutilized habitat as buffer when marine survival again becomes reduced.

Specific comments on species status in Draft BiOp:

4.3.2 SR Fall Chinook

The draft BiOp speculate that strong adult returns over the last four years suggest that adult returns over the next four years will be strong. However, NOAA Fisheries is disregarding its own data on the extremely low juvenile SR fall chinook survival rates offered to the region in the July 1, 2004 Findings Report on Actions Agencies' 2004/2004-2008 Implementation Plan. In that report, NOAA Fisheries stated that in-river survival for juvenile fall chinook was 10.2% on average from 1995-1999, and only averaged 8.7% from 2000-2003. Further, in that report NOAA Fisheries stated:

The 2010 in-river survival performance standard has not yet been met, and is not expected to be met for six more years. However, further improvements in in-river survival will be necessary in future years to achieve the 2010 performance standard.

The 2000 FCRPS BiOp set a performance standard of 14.3% in-river survival for 2010. The draft BiOp has no juvenile fall chinook in-river performance survival standards. The juvenile survival rates are declining not increasing. It is inexplicable to us how NOAA Fisheries can speculate that the SR fall chinook population can continue to grow given these circumstances.

4.3.3 UCR Spring Chinook

The draft BiOp states that despite the strong adult returns, both recent and 5-year and long-term productivity trends remain below replacement, and that actions taken under the 2000 FCRPS BiOp do not yet substantially reduce the risk of extinction for this stock. Habitat actions are pending and uncertain. Yet the draft Opinion does not offer any additional protective measures at dams (i.e. more normative conditions with more flow and spill).

4.3.6 SR Steelhead

The draft BiOp states that the lack of spawning information for this ESU makes it difficult to render a quantitative assessment of the stock viability. As with the UCR Spring Chinook, this stock is also not replacing itself despite the recent abundance of adult returns. Yet the draft BiOp fails to require the Action Agencies to fund the data collection efforts necessary to establish a quantitative assessment for viability of this stock. Further, as for UCR Spring Chinook, the draft BiOp does not require the Action Agencies to implement special protective measures at dams (i.e. more normative conditions with more flow and spill) to increase survival and productivity to levels to recover this ESU.

4.3.7 UCR Steelhead

The draft BiOp speculatively states that the high number of recent adult returns will ensure that this stock will not go extinct in the near future. Again, as with other ESUs, the draft BiOp fails to offer any quantitative assessment with respect to this statement and instead offers that 1) the BRT is concerned about the lack of data regarding productivity for this ESU, 2) the low replacement rate for this ESU (0.25-0.30) has not appreciably increased and, 3) the mean proportion of natural spawners declined 10% from 1992-1996 to 1997-2001. The draft BiOp fails to require additional protective measures at dams to increase survival and productivity that are necessary for recovery of this ESU.

4.3.12 SR Sockeye Salmon

The draft BiOp failed to require the Action Agencies to fund sockeye survival studies. The precarious state of this ESU is typified from the available data indicate that few juvenile sockeye survival to Lower Granite Dam. The draft BiOp fails to require the Action Agencies to implement protective measures to insure in-river survival of juvenile sockeye at a high rate. SR spring and summer chinook cannot be considered surrogates for sockeye, as, among other things, sockeye have different migration timing, and are much more susceptible to descaling and injury at dam passage systems than chinook. Further, Mid-Columbia sockeye transportation studies showed that transportation affected adult sockeye homing to natal spawning areas (Mundy et al. 1994). The draft BiOp fails to consider this endangered ESU as a stock with different needs from the FCRPS than other ESUs.

IV. BASELINE

Our previous comments make it clear that we disagree with NOAA's new framework for jeopardy analysis, and the manner in which it fails to consider and in fact forgives impacts associated with the existence of the hydrosystem. The following comments are not intended to acquiesce in the framework, but rather comment on the framework's application and additional effects that result from it.

1. Action Area

In remanding the 2000 BiOp, the Court held that NOAA had too narrowly defined the action area of the project by limiting its definition to only the mainstem corridors of the Snake and Columbia Rivers. The Draft BiOp (at 5-2 to 5-3) defines the current action area as including these same mainstem corridors and “subbasins where Action Agencies have proposed non-hydro mitigation measures ... as well as additional subbasins in which mitigation projects were implemented pursuant to the 2000 RPA.”

NOAA’s new action area suffers from the same problems as the 2000 BiOp action area. By only including certain subbasins where the Action Agencies have proposed or implemented mitigation measures specified in this BiOp the geographic areas are very limited. Moreover, the action area allows only for consideration of those beneficial actions that are being put forth; actions within the region that have caused or continue to cause adverse effects on the species are not considered unless they happen to fall within the same subbasin or stream reach as mitigation. Likewise, the narrowly defined action area also limits the extent to which future state, local or private actions are considered under cumulative effects. We disagree with NOAA’s narrow definition of the action area and that all watersheds within all ESUs affected by the FCRPS need to be included as part of the action area. We note the following additional comments on this issue:

- If a subbasin is not considered part of the action area – where are the impacts of actions in that subbasin considered? It does not appear that they are described or considered anywhere else in the jeopardy analysis, not even under cumulative effects. What if actions in that subbasin affect the action area downstream?
- Even for subbasins that are included in the action area, the Draft BiOp does not identify or consider any action occurring before the year 2000.
- The action area includes “all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action.” Draft BiOp at 5-2. Tributaries are indirectly affected by the operation and existence of the FCRPS because tributary recruitment is greatly limited due to the hydro system, resulting in losses in reproduction as well as system nutrients from adult carcasses that aid juvenile survival, and the FCRPS affects individuals that originate in these tributaries.
- The Draft BiOp fails to account for the fact that critical habitat is being proposed in tributaries currently outside of its designated action area and such areas, once designated, would alter the action area.
- The Canadian and upper Snake storage projects should also be included in the action area.

2. Reference Operation

Under the “reference operation”, dams are included as an immutable part of the environmental baseline. While past and continuing effects of the hydrosystem should

have some place in the environmental baseline (as they did in 2000 BiOp), these effects should not just disappear from the jeopardy equation, nor should NOAA assume that because they are in the baseline, they do not continue to have adverse effects on salmon and steelhead. Including something in the baseline is not an excuse for removing that action's effects from the agency's analysis as NOAA seems to be suggesting in this framework. Under the new framework, however, NOAA has included in the environmental baseline nearly all the factors that were responsible for the declines of the listed stocks, factors that are on-going and that continue to affect survival and thwart rebuilding. NOAA has in effect "grandfathered" in the dams and reservoirs as though they are part of the natural landscape. This includes storage reservoirs: the UPA deems (and the BiOp acquiesces) that irrigation withdrawals are largely beyond the discretionary authority of the Action Agencies. Although some flexibility with flood control is acknowledged, spill caps designed to prevent Gas Bubble Disease limit flood control manipulations.

The gap that results from the difference in operations is unrealistically narrow for the simple reason that with all the constraints, the reference operation is not much different from the proposed action, and in some instances, the two are nearly identical. None of the major methods for increasing survival (breaching or substantial increases in flow or spill) that were used in the past are considered – neither in the baseline nor the UPA.

While CRITFC disagrees with NOAA's new framework and use of a "reference operation", we provide the following comments on NOAA's/ the UPA's delineation of the reference operation.

Non-discretionary operations:

First and foremost, the Tribes do not agree with NOAA's and the Action Agencies' narrow interpretation of non-discretionary authorities, nor do we agree with how this concept has been applied to the new-found environmental baseline condition not conceived in the 2000 Biological Opinion. We believe this interpretation is contrary and counter-productive to the very foundation from which the Endangered Species Act was established. The spirit of the ESA is captured in Section 2, noted below:

SEC. 2.

(a) FINDINGS.-The Congress finds and declares that-

- (4) the United States has pledged itself as a sovereign state in the international community to conserve to the extent practicable the various species of fish or wildlife and plants facing extinction, pursuant to-
- (E) the International Convention for the High Seas Fisheries of the North Pacific Ocean;
- (G) other international agreements; and
- (5) encouraging the States and other interested parties, through Federal financial assistance and a system of incentives, to develop and maintain conservation programs which meet national and international standards is a key to meeting the Nation's international commitments and to better safeguarding, for the benefit of all citizens, the Nation's heritage in fish, wildlife, and plants.

(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, and to take such steps as may be appropriate to achieve the purposes of the treaties and conventions set forth in subsection (a) of this section.

(c) POLICY.-

(1) It is further declared to be the policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes of this Act.

(2) It is further declared to be the policy of Congress that Federal agencies shall cooperate with State and local agencies to resolve water resource issues in concert with conservation of endangered species.

NOAA and the Action Agencies have much broader discretionary authority than is acknowledged and implied in the 2004 BiOp. This authority stems from the ESA, Northwest Power Act and from the enormous regional, and international hardships that the decline of, and subsequent listing of these salmonid species have caused to culture, custom and economic conditions for both tribal and non-tribal interests. The Draft BiOp acknowledges the ambiguity of this issue. (5.2.1 states that “BPA is obligated to provide some level of power generation, although the precise level is not defined.”) There is far more room for discretionary changes to the FCRPS than the agencies’ non-discretionary list of actions implies. As framed in the 2000 FCRPS BiOp, the Action Agencies and NOAA could seek authorization or appropriations to structurally modify or remove parts of the FCRPS. This discretion has been often exercised by the federal agencies and was in fact fully recognized as a fundamental authority of the action agencies in prior FCRPS biological opinions.

The draft BiOp admits that the discretionary and non-discretionary aspects of the FCRPS cannot be quantified. The “hypothetical” reference operation was created with assumptions that cannot be implemented because they are counter to other authorized purposes of the FCRPS. Moreover, in implementing the other authorized purposes of the FCRPS, the Action Agencies are not authorized to drive the majority of the ESUs to extinction. Given the extraordinary ambiguity in authorized operating requirements, the draft BiOp could have sought to quantify the differences between the dams in place under the proposed action and the dams in place with the river run exclusively for the benefit of the 13 listed ESUs. Even this hypothetical case would ignore the changing physical configurations of the dams. NOAA Fisheries failed to establish a meaningful reference case.

What NOAA has done is to interpret a reference condition in the most narrow manner that, not only disregards substantial mortality on these listed species, but is barely distinguishable from some hypothetical mortality level due to some ill-defined proposed action. The result provides substantial assurance towards a status quo operation of the FCRPS; provides little assurance that these effects of the FCRPS to listed populations will be neutral, and clearly provides no assurance that future proposed actions will benefit

salmon recovery. This is incredible as it is clearly recognized by all fishery managers that the Columbia River power system is the one primary factor limiting listed species productivity and abundance and to some lesser degree life history diversity, three of four VSP criteria NOAA holds as standards in salmon recovery. This Biological Opinion can only be interpreted to indicate that NOAA does not expect the FCRPS to be involved or contribute to future salmon recovery efforts.

Transportation/ Spill/ Spread the Risk

Transportation is characterized by NOAA in prior FCRPS BiOps as an “interim operation”. Yet the draft BiOp calls for maximizing transportation for fall chinook and continuation with transportation for spring chinook. NOAA Fisheries has never conducted an assessment on the affect of transportation on SR sockeye, an endangered species, yet the draft BiOp reference operation would continue to transport this ESU. ³

The best available smolt-to-adult return data from juvenile fall chinook PIT-tagged at Lower Granite Dam and either transported or allowed to migrate in-river indicate that the in-river ocean type migrants survive to adults at a higher level than fish that are transported (SFTFA 2004; FPC 2004). For yearling type fall chinook that overwinter reservoirs,⁴ the best available, although limited, data indicates that there is no advantage to transporting these migrants over allowing them to migrate in river (FPC 2004). These data have prompted NOAA Fisheries’ scientists to recommend a “spread the risk” operation with roughly half of the migrants transported and half allowed in-river migration (Williams et al. 2004). Despite this recommendation and the available scientific data, the draft BiOp inexplicably calls for maximum transport of fall Chinook.

Further, the 2000 FCRPS BiOp called for a definitive test of in-river vs. transportation for SR fall chinook in 2005. This date was chosen to accommodate the Action Agencies desire to upgrade the transmission system. Now those upgrades are completed. Under the proposed test, about half of the fish would be transported from Lower Granite Dam and released below Bonneville Dam, the other half would be afforded good in-river passage conditions including spill at all dams and good flow conditions. Tribal, state and federal fishery managers, including NOAA Fisheries have recently collaborated to create an experimental design to tag juvenile SR fall chinook above Lower Granite in 2005 in order to implement evaluation of the test.

Now, inexplicably, the draft BiOp has postponed the implementation of the necessary spill and flow conditions until 2007/2008. Given that the recent and best scientific information clearly shows that transportation is not helping the smolt-to-adult survival of this ESU, it is imperative that the final BiOp require the Action Agencies implement this study via appropriate dam operations and funding of the evaluative research beginning in 2005

³ The only information with respect to transportation of juvenile sockeye and adult returns is from research with Mid-Columbia sockeye. In those studies, transported juveniles returned lower rate of adults to spawning areas than non-transported juveniles.

⁴ As previously mentioned in this declaration, NOAA Fisheries states that 40% or more of Snake River adult returns come from juveniles that overwinter in reservoirs and adopt a stream type life history.

See also the Fish Passage Center's Comments at 2 (Attachment 1).

Flow and Flood Control:

The flow assumptions used for the reference operation are not significantly different from existing conditions and do not reflect the true extent of potential modifications resulting from increased volume from Upper Snake projects, Canadian projects, or modified Dworshak operations. See Fish Passage Center Comments, Sept. 29, 2004 (Attachment 1 at 4) (showing there is little difference in terms of flows when it comes to analysis between the reference and proposed operations). The UPA limits maximum flows to those that can be obtained under the current total dissolved gas standard; the UPA and Draft BiOp do not consider the possibility of increasing the TDG standard. As explained in Appendix B, *Comments on Ocean Conditions and Flows*, the flow assumptions fails to consider alternative flow and flood control operations that would provide greater benefits to the listed species – operations that would seem to fit the reference operation's mold of "the best operations for fish." Operations that should have been prescribed for salmon include a natural peaking-normative system (which is supported by the ISAB) and modified flood control operations, particularly in low to medium runoff years. Please see Appendix B for further discussion. As the appendix shows, the use of modified flood control rule curves, combined with earlier refill, could reclaim 1.3 MaF from the Snake River and 6.7 MaF from the Columbia without significantly increasing flood risks to Portland and Vancouver.

Reference Operation Alternative:

The tribes do not concede the analytical construct NOAA has put forward using SIMPAS to compare two hypothetical sets of dam operations. Even assuming some limited utility of this analysis for illustrative purposes only, a more appropriate reference case would have, among other things the following elements:

- Operation of all of the dams at spillway crest elevation
- Spill 24 hour at all dams, including transport dams, thorough the entire fish passage season from March to October to a total dissolved gas level in the biologically defensible range from 125-130 % TDG ⁵, not 120% TDG which significantly restricts spill levels as used in the draft BiOp reference case.

⁵ In the 2000 FCRPS BiOp Water Quality Appendix B and in the 1995 Fishery Manager Risk Assessment, total dissolved gas up to levels of 125% TDG were considered acceptable relative to lower rates of TDG from reduced spill that forces juvenile and adult salmon through screen systems and turbines with lower survival rates than spill to 125% TDG. Research on TDG indicates that significant depth compensation for juvenile and adult salmonids can allow for even higher TDG levels up to about 130% TDG before gas bubble trauma levels are substantial enough to cause equivalent rates of juvenile mortality as turbine and screen system passage. Thus, spill at higher levels up to 130% TDG should be considered for the reference case. Analysis of three years of research from in-river juvenile salmon sampling in the Columbia River indicates that very low incidences of GBT were found in juvenile salmon that were exposed to dissolved gas levels up to 125% saturation (Backman et al. 2000). Specifically, Backman et al. (2001) found no statistically significant relation between total dissolved gas and gas bubble trauma for chinook salmon. Most gas bubble trauma symptoms were minor (>5% fin occlusion) with severe bubbles (>26% fin occlusion) being observed only when total dissolved gas exceeded 126%. Chinook salmon were rarely observed with gas bubble trauma, despite sampling large numbers when total dissolved gas exceeded

- No transportation and screen systems
- A normative peaking hydrograph accomplished through the use of modified flood control and additional volumes of water from all upper Columbia and upper Snake storage projects as described in CRITFC's 2004 *River Operations Plan*
- Cessation of power peaking flows that reduce salmon migration, cause stranding and entrapment and reduce juvenile survival (ISAB 2003) ⁶
- Temperature control systems in the upper Columbia at Grand Coulee Dam combined with modified flood control to reduce total dissolved gas loading into the Columbia River downstream. ⁷

For the final BiOp, NOAA Fisheries should consult with CRITFC and its member tribes to construct an appropriate analytical framework that is based upon normative river conditions that have strong physical, chemical and biological ecological attributes (ISG 1996).

Effects of the Reference Operation:

5.2.2 Effects of the Existence of the FCRPS and Non-discretionary Operations

The draft BiOp states that NOAA estimates that juvenile SR spring and summer chinook survival through the FCRPS is only 28-58% and for SR steelhead is only 4-50%. NOAA does not attempt to differentiate what portion of this is due to the existence compared to the operation of the dams, but the inference is that this is the survival rate under the UPA.

The draft BiOp also generally describes the impacts of a reduced hydrograph on the mainstem rivers, estuary and ocean plume in this section. These impacts would continue under either the UPA or reference case because flows that would create and restore mainstem, estuary and the ocean plume environment will not be provided. It is important to denote these areas as critical habitat for survival and recovery of the listed ESUs.

130% saturation (Backman et al. 2001). Spawner-to-spawner analyses also indicate that smolt-to-adult survival rates are higher years with high flows and high spill, even though the spill created elevated total dissolved gas levels that were exceeded 125% total gas pressure (Petrosky and Schaller 1998; Deriso et al. 1996; Schaller et al. 1999). The final BiOp should contain monitoring and evaluation elements for juvenile and adult salmon at TDG levels above 125%. While higher levels of dissolved gas may be implemented on an interim basis for salmon recovery, it is important that the Action Agencies move expeditiously forward with structures to reduce TDG to the 110% TDG level that meets federal and state water standards.

⁶ In a review of flow and survival for the NPPC, the ISAB (Report 2003-1) noted that reduction of daily power peaking that fluctuates flows that is most prominent during lower flows reduces attraction flows in dam forebays and diminishes migration cues for fish in more slowly moving reservoirs and hydraulically complex dam forebays. They noted that this was a key concern surrounding the flow-survival relationship. The 1995-1998 FCRPS BiOp required the Action Agencies to examine the impact of flow fluctuations on listed salmon, but this was never accomplished. Later FCRPS BiOps failed to address the issue.

⁷ The Corps of Engineers' Seattle District's 1998 environmental assessment contained an alternative that would keep Lake Roosevelt near full in spring and spill using drum gates that reduced total dissolved gas levels over other water discharge routes. Then in summer, the existing low level outlets at Grant Coulee would be used to take advantage of thermal stratification of Lake Roosevelt to provide cooling of the Columbia River. Research conducted in the 1960's indicated that such an operation could have significant temperature control benefits to the Hanford Reach. Such an operation would reduce power output from the dam, however.

NOAA fails, however, to link these areas as critical habitat in the draft BiOp because NOAA defers discussion of the FCRPS impacts on critical habitat to some future time that is uncertain.

5.2.2.3 Effects on Juvenile Salmon Passage Survival

This very short section fails to fully describe the effects of the FCRPS dams and reservoirs on juvenile salmon. As noted by the ISAB (1996) the presence and operations of dams delays salmon migration, making them susceptible to disease and predation and residualization. Dams fragment salmonid populations, restrict movement of organic and inorganic sediments which in turn reduces trophic diversity and complexity necessary to support survival and restoration of listed ESUs. For example, Congelton et al. (2003) have noted that juvenile salmonid growth is compromised in migration due to lack of adequate food resources in FCRPS reservoirs.

This section of the draft BiOp fails to address water quality, a key limiting factor for salmonid survival and restoration. Beyond temperature and toxic containment accumulations caused by the presence and operation of the FCRPS, the reduction of historical turbidity levels from dam reservoirs is likely a key factor in reduced anadromous fish productivity. For example this loss in turbidity has facilitated avian and piscine predation on downstream migrating salmon smolts. Lack of sediment transport has impoverished nutrient cycling as noted by Heede and Rinne (1990) and Power et al. (1997). Junge and Oakley (1966) compared the productivity of Mid-Columbia chinook salmon and steelhead before and after hydro development. They concluded that the lack of turbidity suggested heavier rates of juvenile predation and reduced returns per spawner. They described Ricker curve analyses by Junge (1967) that showed that non-selective mortality (i.e. loss of turbidity and increased predation) had a more severe effect on production than other sources of mortality. Baseline turbidity levels have been positively correlated with juvenile salmon survival increases by Percy (1992) and NMFS (1999).

Temperatures in bypass systems have been found to exceed water quality standards for much of the summer salmon migration (WDFW and ODFW 2000). Further, recent studies indicate that juvenile salmon that must pass through screen bypass systems have a significantly lower smolt-to-adult return rate than juvenile salmon that pass primarily through spill (Bouwes et al. 2002).

Recent juvenile survival data also indicates that juvenile survival is increased with higher spill levels, even if these levels cause total dissolved gas in the river to exceed 125% total gas pressure. Analysis offered by the Fish Passage Center indicates that juvenile chinook survival in spring of 1994 with a 10.5% spill level at Lower Snake dams was 0.698; the survival of juvenile chinook in spring 1996 though the same Lower Snake dams at a 24.7 % spill level was 0.857 (DeHart 1999).

There are important aspects of delayed or indirect mortality that are not addressed by the draft BiOp. For example, while the draft BiOp states that turbine mortality is higher than other routes or mortality, it does not address delayed or indirect mortality per route of dam passage that occurs to salmon. This is critical and has yet to be examined by NOAA

or the Action Agencies. For example, Kostecki et al. (1987) found that juvenile Atlantic salmon that has passed through turbines suffered selective descaling and microscopic brain and muscle lesions. Both of these impacts contributed to increased delayed mortality over an 8 day period. Of 30 fish that were examined with brain lesions, only 13 survived when held over 48 hours. In addition, abdominal descaling from turbine passage was found to cause lowered survival than descaling in caudal or dorsal zones.

The draft BiOp fails to describe the findings of Gilbreath et al. (1993), who noted that juveniles collected in the estuary that passed through the screen bypass system at the Bonneville Second powerhouse suffered nearly 20% mortality versus 4% for those that passed through spill and 18% for those that passed through turbines. The results were statistically significant at the $p=0.05$ level. Dawley et al. (1996) reviewed adult return rates for the juveniles used in the Gilbreath et al. (1993) studies and found that the adult returns, while too few for statistical significance, maintained the same survival trends as found for the juvenile groups.

Based upon the partitioning of spawner-recruit data that describes the overall mortality of yearling Snake River chinook from brood years 1957-1990, Budy et al. (2002) report a direct mortality rate of 25-73% and an indirect mortality rate of 37-68%. Significant delayed mortality to juvenile salmon that were held after passage through mainstem screened bypass systems was also noted in research by NMFS (Park et al. 1986), where fish were held for several weeks after passage.

As noted by the Northwest Power Planning Council (NWPPC 1999) the final FCRPS BiOp should incorporate two biological principles that guide decisions as to how to meet performance standards for juvenile and adult fish passage through the FCRPS:

- ***protect biodiversity*** -- passage solutions must be designed to benefit the range of species, stocks and life-history types in the river, which may require multiple passage solutions at a project, and
- ***favor passage solutions that best fit natural behavior patterns and river processes*** -- the best passage solutions are those that take into account and work with the behavior and ecology of the species and life-history types using the river system, that mimic the natural situations and processes that emigrating salmonids encountered in their evolutionary history.

5.2.2.4 Effects on Adult Salmonid Passage Survival

The draft BiOp fails to describe the cumulative and synergistic impacts to adult salmon that must pass up to 8 or 9 dams to natal spawning areas. Significant rates of adult fall back are not considered in this section. Fish that fall back lose important, finite energy reserves and are subjected to injury and delayed mortality from turbines or screen systems not designed for adult passage. The energetic costs to adult salmon that must pass through fishways and reservoirs is not considered in this section. These loss of energy reserves are significant (Geist et al. 2000) and can affect passage to upper reaches and overall spawner success. When adults must pass dams with temperatures exceeding

water quality standards in fishways and reservoirs, loss of vital energy reserves and gamete viability are both likely outcomes (McCullough 1999).

Adult salmon mortality through turbines has been estimated from 22% -51% (Wagner and Ingram 1973; Buchanan and Moring 1986; Liscom and Sturehrenberg 1985). Juvenile and adult salmon that are subjected to screen system passage are exposed to and held at temperatures that are significantly warmer than that found in the ambient river (Hoffarth 2000)

Further, the draft BiOp fails to describe FCRPS impacts to repeat spawning steelhead kelts. The numbers of these fish are significant. For example, Evans and Beaty (2000) estimated that over 15,000 kelts were migrating seaward in the lower Snake River during one migration and of tagged kelts, and of those marked at Lower Granite Dam only 0.6% of them were detected at McNary Dam. Many adult steelhead kelts will be migrating downstream through the hydrosystem in April and May. Radio telemetry studies indicate that between 35-50% of steelhead in the Columbia Basin are repeat spawners and return to the ocean (English et al. 2001; Evans and Beaty 2000). Spill will significantly increase the survival of these salmon as well as adult chinook and steelhead that fallback through the dams as they emigrate upstream to spawning areas. Estimates of adults that fallback through the juvenile screen system at McNary Dam alone range from 9,000-10,000 adults in a single year (WDFW 1998-2000). About 31% of adult steelhead that fell back through the McNary Dam juvenile screen systems were found to suffer 39.2% physical injuries (Wagner and Hilson 1991).

NOAA has failed to describe these significant FCRPS impacts on adults. In the draft BiOp, NOAA has failed to require the Action Agencies to operate the FCRPS in a manner that reduces these impacts.

Other FCRPS related effects:

5.2.5.2 NPMP

While pikeminnow predation can be significant, available data indicates that the older, larger age classes of these fish has been exploited from FCRPS reservoirs at a high rate-leaving only a small number that are capable of moderate predation rates. While smallmouth bass and walleye are present in FCRPS reservoirs, there is no evidence presented in the draft BiOp or in the research that these fish are significant predators of salmonids smolts. The changed ecology of the Columbia and Snake Rivers by the presence and operation of the FCRPS has created favorable niches for these predators that would be reduced under a normative river reference case.

5.2.5.3 Avian Predation

Avian predator forage rates on juvenile salmonids have been examined by Corps biologists at Bonneville Dam. They found that avian predators were more successful in preying on salmonids in tailraces below the powerhouses than below the spillway. Maintenance and the proposed dredging of the Lower Columbia River can and will create additional avian predator habitat in the estuary. These activities are related to the

operation of the FCRPS due to dam operations that move sediment and result in the filling of the navigation channel. The Lower Columbia Channel Deepening BiOp called for examination of higher flows from the FCRPS to create better habitat in the estuary and near ocean plume, thus this proposed action must be considered in the context of the final FCRPS BiOp with respect to dam operations and critical habitat for all 13 ESUs.

3. Non-hydro Baseline

The regulations implementing the Endangered Species Act make clear that all past and present impacts must be included in the environmental baseline. Accordingly, NOAA is required to include in its baseline the beneficial impacts associated with ongoing habitat mitigation actions taken since the 2000 BiOp was issued. In the UPA, however, NOAA improperly attempts to take credit for actions that are ongoing and that have been implemented pursuant to the 2000 BiOp. For example, the only hatchery action in the UPA consists of continuing the Safety-Net Artificial Propagation Program (SNAPP) for Snake River sockeye, and developing SNAPPs for other populations at risk. This action is ongoing and was clearly defined in the 2000 BiOp as part of the RPA (RPA Action 177). Nonetheless, NOAA attempts to "double count" the SNAPP program and attributes a high level of benefit to this action when calculating the effects of its UPA on Snake River sockeye. NOAA cannot include actions such as these in the proposed action; in so doing, NOAA overestimates the benefits of the proposed action and underestimates the "gap" between the UPA and the reference operation.

Likewise, the Expanded Northern Pike Minnow Program, which is identified as part of the UPA (UPA at 19), should actually be included as part of the baseline. As the UPA notes, the expanded program was utilized in both 2001 and 2004. The notion that the Expanded NPMP would not otherwise be assured outside of the UPA, and is therefore not part of the baseline, is disingenuous. First, NOAA Fisheries expressly declined to consider the expanded program as mitigation for effects on listed SR Fall Chinook from the Action Agencies' proposed alterations to the 2004 spill operations because the expanded program was already part of the 2000 BiOp RPA. The action agencies should not be allowed to now count the expanded program as part of a new action when they were previously obligated to implement the program, and did in fact implement the program in two recent years. Second, in the artificial world of the "reference operation," actions such as the Expanded NPMP should be considered part of the best operations for fish. It is illogical that the agencies can rely so heavily on non-hydro actions as part of their "proposed action" yet the same clearly achievable and previously required actions are not included as part of the best operations for fish. Since the Expanded NPMP is the only predation measure considered by NOAA Fisheries (Draft BiOp at 6-44), the effect of including it in the baseline would be to remove the .6% or "low" benefit credited the program from the net effect analysis – with potentially significant changes in the final determination of net effect. This is just one of several examples of items that should be included in the baseline and are being double counted.

Harvest:

Regarding harvest, the Draft BiOp, Section 5.2.9, indicates that the environmental baseline includes Treaty Indian fishing rights, but implies that these rights are represented by the harvest rate schedules shown in Tables 5.1 and 5.2. In fact, the Treaty fishing right is not simply an agreed to harvest rate schedule, but it is the right to access 50% of the harvestable surplus. For the purposes of this environmental baseline, the document should assume tribal fisheries at sufficient levels for the tribes to access the appropriate tribal share. If NOAA wishes to include tables 5.1 and 5.2 for informational purposes regarding recent fisheries, the document should clarify that the overall impacts shown do not necessarily represent the treaty right and that past allocation agreements between treaty and non-treaty fisheries may not be carried into future agreements.

Additionally, Table 5.1 should clarify that the harvest rates for A-run and B-run steelhead are modeled impacts based on the Bonneville Dam run size not the river mouth run size as is generally done for Chinook impacts. For winter, spring, and summer fisheries, actual steelhead harvests are not estimated by A-run or B-run harvest so actual group specific harvest rates are not known. Table 5.2 should clarify that non-treaty harvest impacts on A-run and B-run steelhead are also just modeled impacts. Actual non-treaty fall season harvest rates are not calculated for A-run and B-run steelhead separately and are not known.

The Draft BiOp should also mention that there are treaty fisheries in the Snake River Basin that should be included in the baseline if the mainstem fisheries are included.

Artificial Propagation:

The language in this section (Section 5.2.8) is misleading, and some statements are disingenuous. Whereas in the new NOAA hatchery policy (Federal Register 69(107): 31354-31359) and listing determination (Federal Register 69(113): 33102-33179) a few tacit statements indicating that fish from hatcheries have the capability to improve abundance of listed populations are made, no such admission is provided here. And, the statement that NOAA is “redefining” the role of hatcheries is misleading. Consideration has been given as to whether or not fish from a hatchery program should be included or not within a particular ESU in the listing determinations, however, neither the hatchery listing policy nor this section of the BiOp promote use of fish produced in reformed hatchery programs for “maintaining and improving ESU viability”, in spite of the tacit admissions that this indeed can be the case. Instead, these documents simply continue the previous policies which focus instead on studies to determine negative effects associated with stocking of hatchery-produced fish (erroneously attributed to hatchery production *per se*, see below), and on the short term economic interests of using “excess” adipose-clipped hatchery fish production to support terminal fisheries, which in addition are not “benign” to natural populations. If salmon recovery was in any way an objective of the BiOp and the hatchery policy, then reform of agency objectives and hatchery management practices would figure in these discussions – but, they do not. This is most curious as ample support exists in (inter)agency reports and the published literature (RASP 1992, Cuenco et al. 1993, Cuenco 1994, Brannon et al. 1999, Flagg et al. 2000, ISG 2000, ISAB 2003, Williams et al. 2003, and HSRG 2004, Brannon et al. 2004, among others) for use of reformed/supplementation hatchery techniques to: 1.) diminish

or eliminate the negative effects that hatchery stocking has had on associated natural populations, and 2.) rebuild depressed populations and sustain them during the longer-term process of habitat rehabilitation. Additionally, these same objectives are what have been driving the Action Agency-funded HGMP process.

Unfortunately, recovery (or even efforts to diminish the rate of decline) of listed salmonids is no longer considered a necessary objective of the BiOp, and supportive hatchery-related activities are almost nonexistent within the UPAs. Of particular concern is the quasi-elimination of the detailed commitments expressed in RPAs #169 to #173 in the 2000 BiOp. In this previous BiOp, the Action Agencies committed themselves to enacting reforms in the hatchery programs affecting listed ESUs, as identified and approved (by NMFS) in the HGMP process. In spite of the fact that it was Action Agency funding which financed the HGMP process, the Action Agencies in the current BiOp intend, only as a possible “conservation action”, only to “consider funding and implementing hatchery reform actions” identified in the HGMPs (p. 33-34 of Crosswalk of 2000 NOAA FCRPS BiOp RPA Actions and the 8/30/04 Draft UPA). The sole action involving hatchery production that was deemed as essential to avoid jeopardy in the current BiOp was continuance of support for the Red Fish Lake sockeye salmon conservation hatchery program. Without the hatchery program there would literally be no Redfish Lake sockeye – an obvious case of jeopardy. Apparently it will only be until the time that the other salmon and steelhead populations involved in the safety-net review process (see RPA/UPA # 175) have reached the essentially extinct level of Redfish Lake sockeye, that reforms in hydro-system management might be called into question.

Use in this section (5.2.8) of the example of the 90% reduction in coho salmon in the lower Columbia River is disingenuous, for 2 reasons: 1) As described by Brannon et al. (2004), negative effects due to stocking of fish produced in hatcheries are in no way inherent to hatchery production of fish, but to the nature of the fisheries agency objectives and the hatchery management techniques employed. The case of lower Columbia coho is a fine illustration, where responsibility for demise of these runs can be squarely placed on the effects of agency policy and hatchery mismanagement (not hatchery production *per se*). Natural coho production was diminished significantly due to overfishing and habitat loss associated with dam construction. As “mitigation”, however, hatchery programs were created, but were managed in a manner that disallowed rebuilding of the natural runs. Hatchery broodstocks often consisted of (mixes of) out-of-basin fish, and breeding was strictly segregated, resulting in some level of selection for hatchery performance (versus success in the wild). All fish were released directly from the hatcheries, which were located lower in the river systems than the natural spawning areas, and only a very small percentage of strays ever made their way beyond to successfully spawn in these areas. Hatchery stocks were deliberately selected for early run timing, as this better supported the commercial and sport fishery, but at the same time rendered the fish increasingly ill-adapted to spawning and fry survival under natural conditions. And, continued heavy fishing pressure was responsible for continued take of fish from the dwindling natural populations. 2) While raising the example of loss of coho runs in the lower Columbia, no mention is made of situation for coho in the upper Columbia. Following successive population declines associated with dam construction in

the upper Columbia, state fisheries agency policy consistently blocked any efforts which might restore natural runs of this species, for reasons based primarily on a desire to prevent creation of a tribal fishery on coho which might interfere with the growing sport fishery for steelhead. It has only been in recent years that tribal efforts (not federal nor state), associated with repercussions of the U.S. *versus* Oregon decisions, have led to hatchery reintroductions and supplementation programs that have been successful in establishing nascent natural coho runs into the Yakama River (Yakima Tribe), Clearwater River (Nez Perce Tribe) and the Umatilla River (Umatilla Tribe).

4. Factors Affecting the Species in Action Area

The Draft BiOp attempts to downplay the significance of the mainstem with respect to trophic systems that support juvenile salmon survival. The mainstem is more than a corridor for salmon to get to the ocean. Before the presence and operation of the dams and reservoirs, it provided key food and cover resources that were critical habitat for salmon productivity. A comparison of growth rates between the juvenile salmon and abundance and diversity of macroinvertebrate assemblages in the Hanford Reach and a FCRPS reservoir clearly indicates differences that can be attributed to differences in ecological systems.

The Draft BiOp fails to acknowledge strong evidence that yearling chinook have inadequate food resources in FCRPS reservoirs. In several years of research, Congelton et al. (2002) demonstrated that yearling chinook are in a negative energy balance as they migrate downstream through the Snake and Columbia Rivers. This is likely due to the long migration time due to the presence and operations of the dams and the lack of quality food resources in the reservoirs. Lentic reservoirs cannot support lotic macroinvertebrates such as mayflies and stoneflies, that have a higher food quality than benthic macroinvertebrates such as chironomids and midges. The lack of riparian vegetation along the mainstem corridor from diel swings in pool elevations from hydro operations also reduces organic materials that are necessary for primary and secondary production. Operation of the FCRPS dams also removes critical large woody debris that is key to critical habitat in the mainstem and estuary. The Action Agencies actively remove this debris in forebays of the dams, instead of allowing it to pass downstream to enhance critical habitat.

The Draft BiOp admits that even under the reference case, in-river juvenile survival only ranged from 36-60%. These estimates did not include delayed mortality from relative routes of passage than can range from 37-68% (Budy et al. 2000). The Draft BiOp estimates that under a free flowing river, juvenile survival would be 85%. Not including delayed mortality, this indicates a “gap” of 25-49% in juvenile survival.

Additionally, the Draft BiOp fails to include the following effects on the species in its baseline determination:

- The reduction in water velocity and juvenile migration rate as a result of the dams and reservoirs, and the effect of such on fish condition and migration timing.

- Effects of reservoirs on temperature and the resulting effects on fish reproduction and survival
- Extent of contaminants in the action area and their effects on listed species. Particularly, the Draft should note the water contamination that result from the on-going operation of the FCRPS (i.e., oil). See Appendix D, *PAH Impacts to Salmon*, for a technical discussion of the effects of such contaminants.
- For Snake River Fall Chinook, analysis of the mainstem Clearwater River, even though fall Chinook spawn there and it is listed critical habitat.
- For Snake River steelhead, analysis of the Clearwater subbasin, including the N. Fork, even though the N. Fork is included in NOAA's definition of the action area.

Specific comments on Section 5.3 regarding factors affecting baseline tributary habitat:

Section 5.3.1.3.1 *Little Salmon River. The watersheds occupied by this population have been degraded from their historical conditions and are believed to be limiting for spring/summer chinook because of flow, altered channel morphology, temperature, grazing, roads, and forestry practices. The lack of a properly functioning riparian corridor in the Little Salmon River has affected stream temperatures and the structure of the channel due to a lack of LWD recruitment. (NPCC 2004b draft Salmon River Subbasin Plan).*

Grazing and forestry practices are admitted to have caused significant habitat degradation, leading to temperature elevation.

Section 5.3.1.3.2 *Lemhi. The watersheds occupied by this population have been degraded from their historical conditions and are believed to be limiting for spring/summer chinook because of flow, altered channel morphology, temperature, water quality, grazing, and agricultural practices. The hydrologic regime (peak flows, base flows, flow timing) and connectivity of most Lemhi tributaries have been altered by irrigation withdrawals.*

Similar effects have taken place in the Lemhi. No mention was made of increased sedimentation. Although grazing has been a significant impact in the Lemhi, this was not mentioned.

Section 5.3.1.3.3 *Upper Salmon River (Salmon River and tributaries upstream of the confluence of the Pahsimeroi River). The watersheds occupied by this population have been degraded from their historical conditions and are believed to be limiting for spring/summer chinook because of flow, altered channel morphology, and grazing..... Sedimentation from various land use activities has impacted habitat quality and quantity in the mainstem from the East Fork confluence to the headwaters (NPCC 2004b draft Salmon River Subbasin Plan). Roads, timber harvest, grazing, and changes to the hydrologic regime of the small Upper Salmon tributaries have acted alone or cumulatively to contribute excess*

amounts of fine sediment to channels (NPCC 2004b draft Salmon River Subbasin Plan).

Grazing and timber harvest have caused significant habitat degradation in the Upper Salmon drainage.

Section 5.3.1.3.4 *Salmon River, Mainstem (downstream from East Fork). The watersheds occupied by this population have been degraded from their historical conditions and are believed to be limiting for spring/summer chinook because of flow, altered channel morphology, grazing, agricultural practices and roads. Sedimentation from various land use activities has impacted habitat quality and quantity in the mainstem from the East Fork confluence to the headwaters (NPCC 2004b draft Salmon River Subbasin Plan). The diversion of water for irrigation and its subsequent return, combined with reductions in riparian shading, represent the primary factors contributing to increased temperatures in the mainstem Salmon from the 12-mile section upstream to Challis (NPCC 2004b draft Salmon River Subbasin Plan).*

Sedimentation and temperature increases have been caused by a combination of grazing, agriculture, road building, and water withdrawal in the Salmon River mainstem downstream of the East Fork.

Section 5.3.8.3.1 North Fork John Day River. *The Forest Service also completed consultation on Tower Ecosystem Restoration Projects (TERP). The activities proposed in the TERP included planting, trail relocation, slope stabilization, hazard tree removal, thinning, fencing, road repair, road obliteration/decommissioning, fish habitat improvement, soil compaction reduction, big game forage enhancement, recreation site rehabilitation, fuel reduction and wood fiber salvage, and herbicide application. NOAA that these actions will cause some short-term increases in stream turbidity and sedimentation rates in watersheds located within the action area. However, the actions are not expected to impair currently properly functioning habitats, appreciably reduce the functioning of already impaired habitats, or retard the long-term progress of impaired habitats toward proper functioning habitat condition.*

NOAA Fisheries apparently wants to consider its actions in approving risky timber sales as a demonstration of its sensitivity toward preventing unwarranted impacts to fish habitat. However, the Tower Salvage Sale, the Summit Fire Salvage, and other projects of this and other types that NOAA Fisheries has approved, often do not qualify as protective actions. The Blue Mountain Biodiversity Project (BMBP), the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), and CRITFC produced an appeal of the Big Tower EA (September 8, 1997), which was rejected by the USFS Administrative Appeals Office. The BMBP brought a lawsuit (July 24, 1998) that incorporated much of this appeal, including an affidavit from CRITFC. The district court ruled against the BMBP, but the decision was appealed again by the BMBP and the 9th Circuit reversed

the district court. On November 5, 1998 the 9th Circuit ordered that all logging be stopped until an EIS was completed.

The Tower Fire burned 51,000 acres (a 10 x 14 mile swath). Between the point when the district court upheld the USFS decision, and when the 9th Circuit overturned this decision, the USFS removed 80% of the salvage timber. However, many significant issues were brought out in this written legal decision of *Blue Mountains Biodiversity Project v. Jeff Blackwood, Umatilla National Forest Supervisor* (1998 WL 828124 (9th Cir. (OR.))):

- The USFS must provide a convincing statement of reasons to explain why the project's impacts are insignificant.
- The USFS did not take a "hard look" at the environmental impacts or the cumulative effects of the Big Tower Project and other proposed timber salvage sales.
- The USFS did not consider recommendations of the Beschta et al. report concerning ecologically sound post-fire salvage logging (a report co-authored with CRITFC staff).
- There was no documentation of the estimated sediment resulting from logging and roadbuilding or impacts on fisheries habitat.
- A proper evaluation of impacts of increased sediment is one that determines the effects of increased sediment in light of the existing condition, not merely one that states that effects are insignificant in comparison with existing background condition.
- BMPs that were tested on similar but unburned areas cannot be assumed to be effective when applied on burned areas.
- The UNF cannot argue that this action is tiered to the Forest Plan. A forest plan programmatic EIS does not eliminate need for a project-specific EIS.
- An EA is inadequate in addressing cumulative effects of multiple salvage logging projects in combination with the effects of the fire.
- NEPA requires a comprehensive analysis (i.e., an EIS rather than an EA) of major actions proposed in the wake of a large fire so that actions taken are based on complete information.

NOAA does not appear to be actively rejecting such management proposals in ESA areas as being too risky in salmon habitat. CRITFC has produced photo-documentation of the damage caused by some of the salvage sales undertaken by the USFS with approval of NOAA Fisheries. NOAA Fisheries has an urgent need in its Bi-Op to improve its scrutiny of timber harvest, grazing, road building, and mining on federal land but remains silent on standards of conduct, habitat standards, or levels of impact that it considers protective. In this framework there is seldom an action that will not be approved.

We give reference to the following document regarding the Tower Salvage: Letter from Donald Sampson, CRITFC Executive Director to Jeff Blackwood, Supervisor, Umatilla National Forest, February 16, 2000.

Section 5.3.12.3 Tributary Habitat Conditions. *Along the Salmon River, diking, alluvial groundwater pumping, and encroachment by residential and road development have reduced access to sloughs, side channels, and springs that are heavily influenced by cooler groundwater sources, compounding the thermal stresses of the mainstem and reducing the area of thermal refugia along the migratory route. Legacy forestry, irrigation, and existing grazing and forestry practices have also contributed to major tributary warming, which in turn results in warming of the mainstem Salmon River.*

The effects of grazing and timber harvest are extremely extensive sources of elevated sedimentation and water temperature increases throughout the Columbia, yet these impacts are not considered part of the restoration process. The BiOp admits that water temperature effects occur in the tributaries and these impacts translate downstream into mainstem areas, yet it is not inclined to control mainstem temperatures by finding opportunities to reduce temperatures via reduction in logging and grazing impacts throughout entire tributary systems. Impacts to headwater areas are frequently ignored altogether, even though sediment and temperature effects extend downstream into salmon and steelhead habitats.

V. PROPOSED ACTION

The term of the draft BiOp has been extended to 2014 simply to accommodate a very speculative schedule for installation of removable spillway weirs-an unproven technology. This timeline no way connected to recovery plans or even productivity benchmarks leading to delisting of the ESUs. The term of the draft BiOp should have considered the timeline for finalizing reviews of the various Technical Review Teams that have been charged with assembling the retrospective and prospective analyses that would lead to recovery plans for the 13 ESUs. There is no mention of these analyses, much less timelines for completion of the analyses and how they would be integrated in a timely manner for recovery plans for the 13 ESUs.

1. Hydro Operations

Flow and Flood Control Operations:

Current operations often fail to meet flow targets; under the UPA, the probability of meeting flow targets will decline even more. *See Appendix B, Tables 4a and 4b* (showing in all but one instance that the UPA probability of meeting flow targets is less than that under the 2000 BiOp).

As mentioned above and discussed in more detail in Appendix B, neither the reference operation nor the UPA consider a natural peaking-normative system for flow operations or modified flood control operations that would benefit fish, particularly in low to medium runoff years. Moreover, the UPA fails to consider the tribal preferred river operations, which incorporate these alternative operations. As Appendix B discusses, the use of modified flood control rule curves, combined with earlier refill, could reclaim 1.3

MaF from the Snake River and 6.7 MaF from the Columbia without significantly increasing flood risks to Portland and Vancouver. The UPA should have considered such alternatives, and NOAA should adopt such alternatives as being beneficial for the species. Additional alternatives and considerations for forecasting and operations are also discussed in Appendix B.

2. Mitigation Actions

RPA v. UPA:

NOAA and the Action Agencies have continuously asserted that many (if not most) of the mitigation actions in the 2000 BiOp RPA have been adopted into the UPA and are considered in the Draft BiOp as part of the proposed action. The Tribes expressed their concern, noting to Judge Redden's request to identify such, that there was a lack of clarity in the UPA and the Draft BiOp as to exactly which RPAs have been implemented, which made it into the BiOp as a proposed action, and the details and extent of each action.

In response, the Action Agencies have provided a "crosswalk" analysis describing how each of the 199 RPAs are treated within the draft UPA. We note, however, that this "crosswalk" was delivered to us on the afternoon of October 6, 2004, just two days before comments on the Draft BiOp are due. While this information is vitally important to our analysis of the Draft BiOp, it comes too late for us to adequately incorporate it into these comments. We therefore reserve the right to submit additional comments on the Draft BiOp as they relate to the "crosswalk" at a later date.

We note that the "crosswalk" appears to merely reference the same vague sections of the UPA that the Tribes (and many other parties) had requested clarity on, or states that further information will be provided in the final UPA. The Final 2004 BiOp, should provide clear, focused language as to whether the UPA's in the new BiOp differ from the RPAs in the 2000 BiOp. Specifically, which of the RPAs are in effect, which are dropped or how have they changed? Of those RPA's in effect, what is the timing for implementation, specific objectives and elements to be measured for attainment of success?

Upon initial review of the crosswalk, it is evident that not all of the 199 RPAs from the 2000 BiOp are fully represented in the UPA. Furthermore, the RPAs that have been transferred to the UPA are no longer prescriptive and the wording does not lead the reader to the conclusion that the action will take place or even be evaluated. The UPA comments indicate that actions will be done "as warranted," but there is no mechanism to explain what makes an action "warranted" or who will make such a determination and under what process. A crucial part of the No Jeopardy finding in the updated BiOp is the reliance on the implementation of the previous BiOp's RPA to insure mitigation for the survival gap between the reference operation and the proposed operation. Following are three initial examples where the RPAs have not been fully incorporated into the UPA:

RPA 35. The original RPA directed that the COE shall conduct a “detailed feasibility analysis of modifying system flood operations to benefit salmon”. This work would be done with all interested parties and that a draft feasibility analysis will be presented to all interested agencies, NMFS, and the peer review panel by September, 2005. The UPA only identifies that a reconnaissance level study will be conducted in 2004. There is no mention of an actual feasibility study, working with interested regional parties, nor a timeline for a draft. The cross walk mentions that further information will be provided in the final UPA, which makes it impossible for reviews to provide full and comprehensive comments, and considering the compressed timeframe this would appear to be a failure on NOAA’s and the action agencies part.

This item is especially troubling since altered flood control allowed NOAA to redistribute flow to better meet their flow targets and these increases in flow produce increases in survival for the reference operation. Further, spill operations at McNary are tied to flow since this project has generation limitations. Any time the flow exceeds generation, forced spill is produced and a survival benefit occurs since spill has a lower mortality than other routes. The lack of hydraulic capacity acts like a spill program, at McNary. If model flows are lower than hydraulic capacity as they are in the UPA, there is no more spill program at McNary. The flood control study is crucial to allow more flexibility in flow management which would allow for operations closer to the reference operation.

RPA 54. This RPA details the implementation of the annual spill program for all mainstem projects on the Snake and Columbia FCRPS projects to meet the performance standards. The UPA on the other hand states that spill may be modified by implementation planning adaptive management decisions. Furthermore the cross walk states that further information will be provided in the final UPA, which makes it impossible for reviews to provide full and comprehensive comments, and considering the compressed timeframe this would appear to be a failure on NOAA’s and the action agencies part. This would indicate to the reader that this RPA, which relates to what the BiOp refers to as the safest passage route for migrants, is variable depending on the implementation planning and adaptive management. There is no discussion or outline as to how the decision will be made to change or modify the spill program, nor what process will be used to evaluate the weight of evidence in different proposals. This appears to be a very similar process that was employed for the proposal to alter summer spill in the 2004 migration season, which was based on making estimates based on estimates with no certainty of the outcome. Staff is greatly concerned that what has been identified as a critical route of passage can be altered from year to year depending on this nebulous process that appears to have little to any regional oversight or input.

RPA 159. Subbasin planning and assessments, funded through BPA’s Fish and Wildlife Program, and BOR’s initiation of tributary habitat restoration actions in priority subbasins (RPA 149), together formed part of the cornerstone of the 2000 BiOp’s so-called “aggressive non-breach” offsite mitigation strategy. In its 2003 Check-In Report, NOAA Fisheries noted implementation concerns for both, citing in particular the time slippage regarding subbasin planning

Though these actions, among others, were deemed necessary to avoid jeopardy at the time and are no less biologically important now than they were when initially proposed, the Action Agencies have essentially redefined them in the 2004 draft BiOp as discretionary measures. Given the ruling in NWF v. NMFS and the ESA's directive to protect and restore listed species, a more appropriate reaction would have been to make these, and other, actions more certain to occur rather than re-categorizing them as discretionary which has the consequences of failed or delayed implementation. We urge NOAA to ensure these actions are truly certain to occur.

Budget and Funding for Mitigation:

The UPA and BiOp proposal also makes no mention of BPA's cuts to Fish and Wildlife Program funding in FY 2002 and FY 2003. From the standpoint of the tribes and other fish and wildlife managers, these funding reductions are a very important context for any increase in mitigation commitment assumed in the UPA or BiOp. We are aware of no plans by BPA to increase the amount of funding that it will provide to fish and wildlife for fiscal years 2007 to 2011. BPA's plans, however, may not be clear until it files testimony in its upcoming rate case identifying its projected budget amounts. Based on BPA's actions over the last three years, we see no reason to expect that BPA will increase funding levels unless it has made such commitments clearly and unambiguously in a regulatory context. Such commitments are not contained in the UPA or BiOp.

The following are excerpted from a 2004 Columbia Basin Fish and Wildlife Authority letter and describes some of our concerns regarding BPA's fish and wildlife funding decisions:

In the past year BPA has taken the following actions to reduce funding for the Program:

- Cut over \$40 million from the Program by eliminating carry-over funding from previous years.
- Cut \$11 million in Program funding by changing from an obligations based planning budget to an Accruals based planning budget.
- Cut nearly \$30 million by imposing a strict interpretation of a Capital funding policy.

Although BPA argues that \$36 million in borrowing authority is available each year for fish and wildlife projects, the application of their stringent funding criteria resulted in only \$6.8 million of fish and wildlife related capital projects actually being funded. As the Council and fish and wildlife managers work to absorb these tremendous reductions to the Program, BPA is now proposing to cut an additional \$15 million from the Program budgets.

Letter from CBFWA to NPCC, dated March 26, 2004. June 2003 testimony of the General Accounting Office before the Senate Committee on Indian Affairs reflects a similar view.

According to NPPC officials: Bonneville's budgeting change caused a reduction in fish and wildlife funding. In a February 2003 letter to the Bonneville Administrator, Power Planning Council staff stated that over \$40 million in fish and wildlife obligations that had been carried over from the 1997 - 2001 rate period were no longer available. The Power Planning Council says that its fish and wildlife program has had to absorb the \$40 million in previous obligations in its 2003 budget.

Statement of Jim Wells, United States General Accounting Office, Testimony before the Committee on Indian Affairs, U.S. Senate: June 4, 2003. www.gao.gov/atext/d03296.txt. Moreover it is our belief that BPA's elimination of the carry forward funding was contrary to the commitments made in the 1996 MOA on BPA Fish and Wildlife Funding. The MOA on BPA Fish and Wildlife Funding, signed by the Departments of the Army, Commerce, Energy, and Interior, may be found on the web at www.efw.bpa.gov/EW/FISCAL/moa.html. In particular, the MOA committed that:

In determining the amount of funding available for obligation in the direct program category after the first fiscal year of this agreement, the calculation of the carry forward balance shall be based on obligation accounting. Any funds remaining in these accounts after close of Fiscal Year 2001 will not be re-programmed for any non-fish and wildlife use, but will remain available for expenditure for the benefit of fish and wildlife.

MOA §VIII.h. Despite what appeared to be unambiguous to the tribal participants in MOA negotiations, BPA eliminated the carry forward funding for the obligations it was carrying forward from FY2001.

In 2001, at BPA's urging concerning its own finances and regional energy supplies, the Corps of Engineers reluctantly reduced flows and curtailed spills for juvenile and adult salmon. The tribes and others in the region were promised that BPA would fund offsets to address the impacts of curtailing fish operations. In fact, BPA did solicit projects for "Action Plan" implementation to offset the effects of the 2001 emergency decisions. The projects identified during the solicitation were reviewed by the Independent Science Review Panel and Northwest Power and Conservation Council (NPCC). After months of effort to prepare and review proposals, the project funding decisions for the Action Plan solicitation left much to be desired from the tribes' standpoint.

- On June 21, 2001, the Independent Science Review Panel reviewed 50 proposals to offset operational impacts, received in response to the "Action Plan" solicitation. Most proposals were sponsored by state or tribal organizations.
- By letter dated June 29, 2001, the NPCC recommended that BPA fund 21 projects with a funding commitment totaling approximately \$24 million.
- By letter dated August 14, 2001, the Council revised its recommendations to request that BPA fund 9 projects totaling approximately \$19 million with agreement to further consider three stream gauging proposals not submitted during the initial solicitation.

- By letter dated March 18, 2002, the Bonneville Power Administration explained its decision to fund four projects from that “Action Plan” solicitation with a total cost of approximately \$1.3 million, of these four projects three were the late-arriving stream gauge projects.

From the tribes’ standpoint, the BPA Action Plan decisions were very disappointing. For instance, the Yakama Nation sponsored two projects with a total cost of approximately \$7 million. The Umatilla Tribes proposed a land and water acquisition project with a cost of approximately \$5 million. These three projects (and others) were recommended by the NPCC to BPA for funding. None of the three tribal projects were included in BPA’s Action Plan funding decision.

Following are specific comments on mitigation actions that were identified in the UPA:

Structural Changes:

RSWs. As discussed later in the discussion on gap analysis, the survival benefit attributable to RSWs is statistically no different than survival through standard spillways as modeled and thus the reliance on these structural improvements as additional mitigation for hydro operation is unsupported.

The Dalles Forebay device. This concept is based entirely upon limited radio tag data from Lower Granite. The forebay at The Dalles is completely different due to the orientation of the dam itself, and therefore any affects of a forebay device at The Dalles are purely speculative and based on no science.

The Dalles Sluiceway modification. To a large degree the benefit of this action can already be achieved by using the full 4300 cfs capacity of the sluiceway instead of the lower ~2500 cfs that has been used in years past.

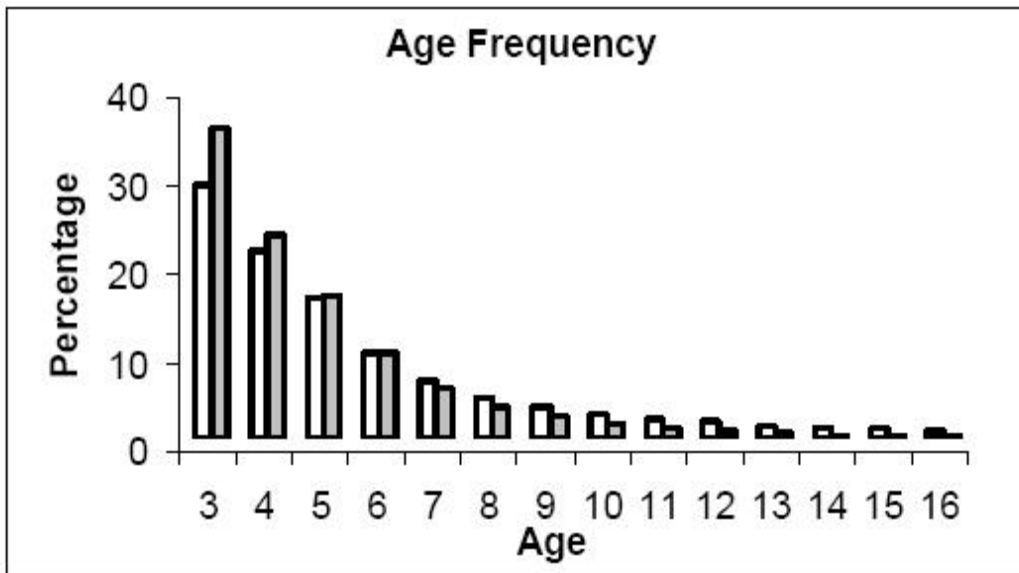
Expanded Northern Pike Minnow Program:

The expanded Northern Pike Minnow Program (NPMP) is an ongoing operation – it was first tried in 2001 in response to the reductions in spill attributed to an erroneous energy crisis. It was again implemented in 2004. The 2000 BiOp has an RPA that directs the action agencies to consider the work of the NPMP and review and implement improvements to the program. Accordingly, and as noted above, this work should be included in the reference operation.

The benefits estimated from this program are somewhat spurious. It is highly unlikely that an increase in the pike minnow bounty will decrease the pike minnow predation on juvenile salmonids to the extent that is indicated in the BiOp and UPA. First, it does not appear that fishing will be allowed in the boat exclusion zones (BEZs) near the dams, where juveniles are most exposed to predation. Studies have shown that approximately 33% of predation occurs in these BEZs during low-spill years (Joint Technical Staff Comments, Feb. 20, 2004). The largest predators are usually found in the BEZs, large

predators make up a disproportionate percentage of the impacts on juvenile migrants. Increasing the pike minnow bounty will have little impact on predation in the BEZs.

The BiOp and UPA indicate that more pike minnows will be removed; however, the action agencies do not account for the predation effectiveness of differently sized fish. The augmented removal program targets fish nine inches in length and up. However, pike minnow do not become preciviorous to salmon smolts until they reach 11 to 12 inches. Hence, an increase in the number of pike minnows removed from the system under the program does not equate to a direct decrease in predation, since only those pike minnows over 11 to 12 inches pose a predation threat to migrating salmon smolts. The BiOp wrongly assumes a direct linear relationship between predators removed and improvement in juvenile survival. At some point, however, the benefits from predation removal. The chart below, taken from the February 20, 2004 Joint Technical Staff Comments, shows that the age structure of the pike-minnow population has already been shortened for younger, smaller fish. The ability to achieve future shifts in this age-structure, is limited, since future reduction in fish age 7 and greater would be necessary to significantly benefit salmon. The suggested benefit from removing larger fish is highly speculative.



[Estimated age structure of northern pikeminnow in the Columbia River before implementation of the NPMP (white bars) and after sustained implementation (grey bars)].

Predator removal assumes that predation effects on salmonids are purely additive within the hydrosystem. It is just as likely, however, that predation effects are non-additive (compensatory). There are many potential predators to salmonids – smallmouth bass, walleye, double crested cormorant, terns, gulls and pelicans – that are not currently being removed. Even if pike minnows are removed, these other predators could fill the void and feed upon the smolts.

Further, NOAA has already included the benefits of the expanded NPMP in its retro analysis used to calibrate the pool mortalities, since the program was implemented in both 2001 and 2004. The pool survival parameter is based on yearly reach survivals and 2001 was used in the NOAA analysis, the benefit has already been factored in. Furthermore, the action agencies argue in the BiOp and the UPA that the expanded NPMP benefits will have carry over benefits that will project into future years. If that is the case, then we are already experiencing the benefits from 2001 and 2004 NPMP. The benefit of the NPMP therefore is already included in the reference operation, and any additional benefit in pool survival used in the UPA case should be removed.

Tern Predation:

Most of the benefit of relocating terns has already occurred and should be accounted for in the baseline operation. The percentage of juvenile salmonids in the tern's diet has already been greatly reduced. Further relocation may result in an additional decrease in salmonids in the tern's diet, but most of the improvement has already occurred. In addition, the effect of removing terns from the estuary may not have any effect on predation of juvenile salmonids because there are multiple species of predators (e.g. fish, birds, pinnipeds) that could increase predation on salmonids. The further removal of one type of predator will likely not result in an increase in juvenile salmonids, as other predators are likely to fill the void and prey upon these fish.

Tributary Habitat Actions:

We do not understand how this 2004 Draft BiOp and UPA is fundamentally different in off-site mitigation than what was offered and remanded in the 2000 BiOp. Our analysis fails to find a) that financial resources are yet secured to accomplish anticipated actions, b) there is any reasonable assurance that the proposed project will have a significant effect, let alone the needed effect to mitigate for the survival gap or c) actions will be implemented in a timely manner. For NOAA to assign any sort of mitigation benefit to off-site actions, NOAA and the Action Agencies must assume the responsibility and the discretion to identify where in specific tributaries, what type of action will occur and when implementation is expected to occur. Only then can any element of certainty towards affect to listed species be assured.

Appendix C provides a review of the latest version of the habitat technical paper entitled *Evaluating the Potential for Improvements to Habitat Condition to Improve Population Status for Eight Salmon and Steelhead ESUs in the Columbia Basin*. The review notes that data is lacking to fully assess habitat potential, and thus the methodology for selecting habitat actions is suspect and may not provide adequate support for the actions chosen and the benefits attributed to them.

The Tribes generally agree that the four categories of off-site mitigation (channel morphology, flow, riparian and entrainment) are appropriate and important areas to improve survival, but the approach that NOAA has chosen is problematic, at best. For example, improvements to flow conditions are needed in many watersheds but we ask two fundamental questions; 1) where in the watersheds will flows be improved? Having

aggressive temporal goals may motivate water acquisition where it is appropriate, but this may not necessarily be where it is needed. Secondly, if water is acquired in one location, how does NOAA expect to keep this water “wet” throughout the rest of the stream, without being diverted immediately downstream at the next diversion point? Another example equally difficult is attributing a certain survival factor to channel morphology or riparian condition. Clearly, these are important, but given the stated 3-year and 6-year objectives, we argue that it will be difficult to credit any measurable enhancement in abundance or productivity for a given life history stage, let alone filling the survival gap as defined in the 2004 BiOp. Typically, these types of actions take many years to mature into their desired intent, and it is highly unlikely that needed benefits will accrue in the specified timeframe.

NOAA states that, “No tributary habitat proposed action was developed for a population if there was low certainty that actions could be completed within the term of this BiOp.” The Tribes are concerned with this rationale for neglecting certain areas that may indeed have a strong need for restoration to occur. Rather than closing the door, it would be much more appropriate if NOAA stated “NOAA recognizes the difficulty of gaining assurance that certain actions can be implemented in various watersheds due to reluctance of local stakeholders or just the nature of the project itself. To enhance the “low certainty that actions could be completed within the term of this BiOp”, NOAA will work closely with Co-managers to identify and prioritize important actions that have a high likelihood for meeting biologic objectives.”

As mentioned in other parts of these comments, the Tribes are very uncomfortable with the fundamental concept and many elements of the approach used in this Draft BiOp. Particularly disturbing is the false sense of “precision” that the qualitative component of the off-site tributary assessment provides. Specifically, we argue that the 1) the level of intensity – or amount of mitigation that is prescribed for each of the ESU’s is woefully inadequate to significantly enhance certain, undefined objectives (assumed to include increased abundance for juvenile life stages), and 2) there is no qualitative assessment for defining confidence that the prescribed mitigation is the right amount to actually assure the desired affect on the populations. What NOAA has done is to interpret the ESA in such a way to define the most limited affect of the FCRPS on the populations, and on the other hand, prescribe the most limited mitigation obligation with little or no consideration for error on either side.

NOAA states that “One reason is to not infringe upon the confidences of cooperating landowners in communicating tentative[tributary mitigation] plans to initiate projects on their lands. The Action Agencies do not want to jeopardize relationships and project opportunities with prospective cooperative landowners by identifying specific projects at this time.” The Tribes suggest that the “tentative” nature of these plans and the reluctance of NOAA to involve the Tribes in planning process (as a “Treaty Trust relationship” might imply) provides substantive evidence to lack of assurance that meaningful off-site mitigation will occur in the 3, and 6-year periods. NOAA should be aware that the Tribes have long established many favorable relationships with local stakeholders throughout the Columbia Basin. Working with the Tribes and State Co-

managers, NOAA could in-fact identify many site specific opportunities, not only providing assurance for future action, but in calculating anticipated benefits. Again, the entire approach to off-site mitigation, and the associated rationale provided above is suspect and in our view, clearly indefensible.

Specific comments on Section 6.0 relating to tributary habitat mitigation:

p. 6-2. *“Habitat conditions that support a sufficient number and distribution of viable populations (i.e., populations with adequate abundance, productivity, spatial structure, and diversity) serve as a valuable proxy for a quantitative survival analysis.”*

NOAA has not defined adequate habitat conditions, involving sufficiency of abundance, productivity, spatial structure, and diversity, for the populations that comprise the ESU. This definitional work is still ongoing by the individual TRTs. NOAA does not present a proxy in this draft BiOp.

p. 6-4. *NOAA Fisheries evaluated the likely biological effectiveness of the Action Agencies’ tributary habitat enhancement actions (identified in the proposed action either by project or proposed performance measures) in relation to factors identified as limiting listed salmonids within those subbasins.*

It is necessary to determine the net effects of these adverse and beneficial effects for each listed ESU. Professional judgment is required to determine the net effect, because it is not possible to evaluate the effects of all activities quantitatively or in identical units (e.g., quantitative survival estimates for the effects of hydro operations for some ESUs must be compared with qualitative changes in habitat condition for off-site actions). Not all actions will occur over identical time periods, so the timing of effects must also be considered.

It is clear that a determination of the net effect of FCRPS and non-hydro actions is largely a qualitative professional judgment. As such, it is likely to be highly influenced by overly optimistic expectations of the action agencies in finding a level of habitat actions that would just balance the negative effects of the hydro actions. In cases where judgment can be questioned and where a conscientious scientist would not make bold speculation, one would employ a precautionary approach. Rather than assume that the entire ESU will fare well by an emphasis in habitat modification on the habitat of only a few populations within the ESU, one would address all habitat. Rather than speculate on how many fish can be credited to installation of a few pieces of large woody debris (LWD), one would install three times more pieces than predicted would be the number needed to compensate for failure rate and the inexact science involved.

Sec. 6.1.3.1.1 Proportional Changes. For the jeopardy analysis, the underlying assumption in the net effects determination is that a relative (i.e., proportional) change in a factor relevant to VSP characteristics in one life stage can be offset by a comparable proportional change in another life stage.

This concept of proportional change may not be reliable. It is based on the idea that if a certain action induces a ten percent mortality in one life stage, this can be compensated by an equal improvement in survival at another life stage, possibly by an improvement in habitat conditions. A tributary habitat improvement in the watershed of one population would have no effect on survival of fish in another population. Also, a habitat impact such as warm water, which might transmit a pathogen to a large percentage of a population, could cause a general level of debilitation to a population that might not be counted as a direct mortality, but in combination with other stresses, could cause delayed mortality or impaired reproductive capacity. It is presumptuous to think that the hydropower system is so mechanistic that survival and mortality can be so neatly balanced.

p. 6-7. The net effects determination. *NOAA Fisheries determined if, on balance, each major population group experienced no change or an increase or decrease in VSP criteria, although the net effects for specific populations within a given major population group could be a mixture of “net improvement,” “no change,” or a “net reduction” in status of the VSP characteristics. Where such a mixture was difficult to interpret, NOAA Fisheries weighted the relative contribution of each population within each MAJOR POPULATION GROUP by its relative abundance and productivity (currently and historically) and any unique traits of the population (e.g., the only summer-run population in a major population group) per Appendix A.....*

Once a determination was reached for each major population group, NOAA Fisheries determined whether the ESU as a whole experienced no change or an increase or decrease in VSP criteria. If the net effect of the proposed action was to reduce the VSP characteristics of any major population group, then NOAA Fisheries determined that the abundance, productivity, or distribution of the ESU was reduced by the proposed action. The magnitude of any such reduction was noted.

The TRTs created a hierarchy within each ESU of major population group (MPG), where each MPG is composed of component populations. Each MPG could have populations exhibiting varying degrees of improvement. However, NOAA implies that it might expect some to show improvement, some a reduction, and some no change. The significant habitat issue affecting the majority of populations is that habitat quality is significantly degraded for most MPGs. It is not acceptable for status and trend to be either static or declining on average for an MPG, because overall habitat degradation is one of the keys to the listings in the first place. In addition, it is a mistaken notion that habitat improvement in a small proportion of the populations of an MPG can result in an average population growth rate where $\lambda > 1$ if static or declining trends are sustained in the remaining populations. All populations must be addressed by habitat improvement. Some will possibly exhibit a response greater than the VSP minimum and some might achieve only the minimum. But if a significant number remain in significant decline and are essentially ignored, MPG conditions needed for delisting will not be achieved.

One of the principles of habitat conservation is that existing high quality habitats not be degraded or compromised. This would be achieved by strict protection of habitat quality via administrative control over actions known to cause habitat degradation. See Rhodes et al. (1994) and *Wy-Kan-Ush-Mi Wa-Kish-Wit* of the Columbia River treaty tribes. One would need to see evidence of livestock grazing reduction along streams and upstream of segments used by listed fish. Road building in currently roadless watersheds would be disallowed. No thinning or logging of trees on any streams tributary to salmon-bearing waters would be allowed when habitat conditions do not meet standards. NOAA continues to take the approach of permitting habitat degrading actions across all population units of an MPG, and now this is followed by recommendations for actions such as installing LWD in stream channels. Such actions cannot mitigate for destructive habitat actions elsewhere in a watershed or within the overall habitat of an MPG, let alone mitigate for hydro actions.

Another major problem is that the difficulty in NOAA determining whether all populations within an MPG are meeting VSP criteria is very great. The number of populations for which productivity is known is small. Knowledge of spatial structure or diversity is even more difficult to summarize. Consequently, it is largely good intention but more accurately, qualitative and very incomplete knowledge upon which evaluation of MPGs will be made. This makes an agreement on hydro actions one where the negative effects will be certain, but the compensating mitigation will be either uncertain in its effectiveness and a poor trade for more uniform and strict regulation of habitat degrading actions or will require so many years to monitor any positive response and the results will be so open to qualitative speculation that the entire exercise is little more than a diversion from tackling actions that would actually do something for fish.

p. 6-76. *“For the North Fork John Day, Middle Fork, Upper Mainstem and South Fork John Day subbasins the Action Agencies translated NOAA Fisheries’ description of anthropomorphic limiting factors into those which are considered to describe the habitat condition instead of “causative factors” in formulating the conservation measure. The Action Agencies also eliminated from consideration some of the “limiting factors” provided by NOAA Fisheries (such as fire activity and forestry) where the Action Agencies have no proposed authority to affect or influence local land use policy. The remaining “limiting factors” were translated into three factors which the Action Agencies can potentially influence by working with local willing landowners: streamflow, entrainment, and channel morphology.”*

NOAA Fisheries identified 16 populations of the Mid-Columbia River steelhead ESU and grouped them into 4 MPGs. The document “Evaluating the Potential for Improvements to Habitat Condition to Improve Population Status for Eight Salmon and Steelhead ESUs in the Columbia Basin” (May 7, 2004) evaluated limiting factors in this ESU and found that sedimentation, riparian conversion, entrainment, and instream flows were the major problem areas of those limited number of factors reviewed. No information was available on floodplain conversion in the John Day. Despite the fact that the NOAA scoring system rated the Umatilla River and Yakima River as more damaged

overall than the John Day River, based on this limited data set, NOAA selected the John Day as the one basin for habitat improvement as mitigation for the hydro damage.

Even though sedimentation was considered a major problem in the John Day, it was eliminated as a factor for consideration. Fire activity and forestry were also deleted from consideration. Livestock management, even on federal lands, was never considered, even though subbasin plans indicate it is a significant problem. The restoration work, after eliminating the truly ubiquitous, grave problem areas, then was translated by the action agencies from the original NOAA evaluation into three items: (1) entrainment, (2) instream flows, and (3) channel morphology. The proposal is to screen 30 diversions in a 3-year period; protect 7 cfs of water; restore access to 24 miles of stream; and restore complexity to 3 miles of stream by improving side-channel complexity, floodplain connectivity, reconfiguring channels, and adding LWD.

The John Day subbasin plan (2004) indicates that: “The John Day is a large subbasin with over 2485 miles of O. mykiss gairdneri spawning and rearing habitat, now located primarily in tributaries and the upper portions of the subbasin (Kostow 2003).” (p. 102). In addition: “The average annual discharge ranges from a high of 4818 cfs in 1984 to the low of 603 in 1934.”(p. 31). Also: “At this time, Reclamation does not have authority to provide funding for construction activities, but is seeking this authority from the U.S. Congress. Reclamation does have authority under the Endangered Species Act (ESA) to purchase or lease water from willing sellers for conversion to instream flows to meet the flow restoration obligations of RPA Action 149. (p. 178).

NOAA is counting on BOR to be its action agency for habitat restoration, but is making no commitments of its own to prevent habitat degradation before it occurs. Despite the fact that elevated water temperature and sedimentation are the key limiting factors on the John Day, there is no commitment to do anything about these issues.

In a basin the size of the John Day where mean annual flows are up to 4818 cfs, NOAA proposes to protect only 7 cfs of instream flows. How many tributaries would this 7 cfs be spread out over in the North Fork, Middle Fork, Upper Mainstem, and South Fork. Despite the fact that the John Day has 2485 miles of steelhead habitat, only 3 miles of stream would receive improvement. And the improvements are by a continuation of methods, such as LWD placement, that have not been shown to result in improvements in fish production, especially where the limiting factors, such as extreme temperature, are unaddressed.

p. 6-78 “The Action Agencies state that, based on their analysis, survival improvements can be anticipated from the conservation measure in the North Fork John Day, Middle Fork John Day, and Upper Mainstem John Day, including the South Fork John Day.”

NOAA makes this claim despite proposing miniscule improvements. NOAA Fisheries does not even support this contention or has no idea whether the mitigation will mean anything to the fish:

p. 6-77 *“NOAA Fisheries does not mean that the potential benefit of individual projects is insignificant at a local scale, but NOAA Fisheries cannot evaluate the overall benefit to the ESU based on the information provided.”*

p. 6-78 *“NOAA Fisheries cannot evaluate the likely effects of USBR’s conservation measure.”* (p. 6-78).

p. 6-78 *“NOAA Fisheries cannot consider the Action Agencies’ cumulative performance metric goals appropriately enough to evaluate biological potential without additional information that explains the significance of the cumulative metric goals to the scope and magnitude factors limiting Mid-Columbia steelhead.”*

Even the Action Agencies do not provide any assurance that their proposal will mean anything to the fish:

p. 6-78 *“The Action Agencies provide no assessment of the relationship between completing projects identified using such criteria and achieving the program magnitude and intensity needed to ensure the overall cumulative biological benefit needed to offset hydrosystem operation mortality.”*

The commitment of the Action Agencies is only to implement a habitat effectiveness monitoring program combined with a RME adaptive management loop so that it can later change the “mix” of actions to be more beneficial to fish recovery (p. 6-78). Monitoring programs are typically one of the least-funded aspects of any restoration program. The “mix” of activities is hardly worth of being called that, because there are so few activities planned for so limited a spatial extent.

There is no indication how improving conditions on the John Day River, even if this were possible with the meager effort proposed, would assist the damaged and declining wild/natural populations of steelhead in the Yakima, Klickitat, Umatilla, Walla Walla, Deschutes, and White Salmon Rivers. These populations also have to migrate downstream past the hydropower system. It is impossible to conceive of any situation where the productivity of any of these systems can be reversed through limited habitat improvement in other systems. Even NOAA will not vouch for this.

All these other populations have to contend with further impacts. Consequently, unless attention is also given to them, the viability of the entire ESU is threatened unless NOAA wants to claim that if 1 MPG out of 4 is sufficient to protect an ESU. But this contradicts the idea that VSP is protected if it risks losing a significant portion of its life history diversity, genetic diversity, spatial structure, etc.

Section 6.9.2.2 Effect of Measures to Protect, Enhance, or Restore Tributary Habitat This program is explained more fully in Section III. D. 4 of the Updated

Proposed Action. Summarizing that section, the Action Agencies propose to address the following limiting factors across the subbasins listed:

Wenatchee: The Action Agencies will focus on projects which address changes in channel morphology which includes floodplain connectivity, entrainment, and riparian enhancement.

Entiat: The Action Agencies will focus on projects which address changes in channel morphology in the lower river to include improvements to stream complexity and channel connectivity. The AAS state that other channel morphology improvements are anticipated in other reaches of the subbasin.

Methow: The Action Agencies will primarily focus on projects which address changes in channel morphology with additional projects to effect limited improvements to instream flow. Some riparian protection and enhancement projects are also proposed.

Instream flows are definitely a significant problem in the Upper-Columbia tributaries, but the emphasis on channel morphology seems to be a significant diversion. If all “morphology” work involves reconnection of floodplain connectivity and riparian enhancement there may be value in some of the work. However, elevated levels of sediment and water temperature in addition to irrigation diversions and flow reduction are the significant issues in these rivers. NOAA appears to be letting the USFS and BLM address sources of these problems in however a manner they see fit, despite its role in permitting only actions considered to contribute to restoration.

Production:

The only upriver ESU that relies on a current production program for mitigation of the proposed hydro operation is the Snake River Sockeye. Draft BiOp Section 6.14.2.3. In the Draft BiOp, NOAA notes the BPA funded safety-net program and the Action Agencies’ commitment to continue this funding – implying that continued funding is all that is necessary to adequately fill the “gap” created by the UPA. However, the adequacy of the current proposed program is questionable, particularly since, as noted in the Draft, all four VSP factors remain at high risk even with the safety-net program. Draft BiOp at 6-88.

The Draft BiOp should mention that no natural origin adult returns to the Stanley Basin are thought to have occurred since 1998. Since then the entire adult return has been from the Captive Brood program. While in 2000, 257 adults did return, since then the adult return was 26 in 2001, 22 in 2002, and 3 in 2003. The return in 2004 may be in the 50-80 range. Between 1985 and 1998 there were three years when the adult return to the Redfish Lake Weir was zero. Clearly the natural origin portion of the ESU is functionally extinct in that there are no longer natural origin adult returns to the Stanley Basin even though some adults from the Captive Brood program are outplanted to spawn. At status quo management of the Captive Brood program, the ESU is almost certainly destined for extinction in the near term. The program simply does not produce enough juveniles to compensate for the extremely low return rate. Even if a small yearling hatchery program is developed that would release 200,000 yearlings annually (as implied

in Appendix F), this will not increase the adult return to viable levels. It will also do nothing to increase the productivity of natural origin fish. A much larger hatchery program is needed to simply maintain the genetic integrity of the remaining portion of the ESU. A small yearling program will not decrease the likelihood of extinction. Only dramatic increases in productivity including passage through the hydrosystem for natural origin fish will maintain the viability of the ESU.

VI. EFFECT OF THE PROPOSED ACTION

The Draft BiOp fails to use available life cycle model tools developed in the independently peer-reviewed PATH process and NPCC subbasin planning process to quantify the affect of hydro, habitat and other actions that reduce survival and productivity for the listed ESUs. Instead, as mentioned elsewhere in these comments, NOAA employs a simple quantitative spread sheet model, loaded with assumptions and without confidence intervals to calculate downstream survival through the FCRPS, and then applies qualitative, judgment rankings to the other factors. This is not the best available science.

GAP ANALYSIS

The NOAA Fisheries “quantitative analysis” of fish survival for the reference and UPA cases fails to link juvenile survival to smolt-to-adult returns, spawner/recruit and productivity metrics. Relative differences of the impacts of the FCRPS with respect to individual passage routes are qualified by NOAA Fisheries using the SIMPASS model,⁸ but actual data regarding relative survival by passage route on smolt-to-adult returns is not utilized. Thus, this “gap” analysis fails to quantitatively measure differences between the two cases and NOAA has failed to utilize the best available scientific information.

NOAA makes a major assumption for the jeopardy analysis that a proportional change in factors relevant to one life history stage can be offset by a comparable proportional change in another life history stage. Draft Section 6.1.3.1.1 – Proportional Change. This in essence means that juvenile mortality can be offset by increasing adult survival. However, this is contrary to basic paradigms of population biology. Healthy sustainable populations have high numbers of juveniles that support fewer adults in the population. With respect to salmon populations, Junge (1967) demonstrated that for non-selective mortality, higher rates of juvenile mortalities depressed salmon populations to a much greater degree that equivalent rates of adult mortalities. The low levels of smolt-to-adult survival through the FCRPS have been shown by various analyses to be the chief limiting

⁸ The substantial weaknesses of the SIMPASS model have been expounded elsewhere in these comments, and in attached comments by the Fish Passage Center. In a review of SIMPASS, the ISAB (NPCC Document 2001-4) noted, among other things, that the model was dependent upon qualitative input assumptions that were expressed at “point estimates” and subjected to a considerable degree of uncertainty. “Best science”, the ISAB noted would, “explore a range of assumptions corresponding to the range of uncertainty”. NOAA did not attempt to caveat the SIMPASS model results on these uncertainties, nor did NOAA take a precautionary approach by including a range of mortality/survival percentages as an alternative to the point estimates they used in modeling the “gap” between the UPA and reference case.

factor to productivity of the ESUs (Petrosky et al. 2001); Schaller et al. (1999), Yuen and Sharma (2004), Wilson (2003).

1. SIMPAS

We once again warn NOAA against using a SIMPAS model to evaluate system survival in its jeopardy analysis. The many problems with the SIMPAS model are well documented; they were set forth in an October 16, 2002 letter from the Columbia basin Fish and Wildlife Authority to the Northwest Power Planning Council (NWPPC) and reiterated in a February 20, 2004 Joint Agency and Tribal Technical Staff Review of the Bonneville Power Administration's summer spill analysis (Attachment 3).

We agree with the recommendation of the Independent Scientific Advisory Board (ISAB) to the NWPPC that it is not appropriate to develop a long-term management plan on the basis of SIMPAS analysis. Management alterations of the magnitude being considered by the NWPPC should be approached in a much more scientific manner as recommended by the ISAB. The SIMPAS model was initially developed by the National Marine Fisheries Service staff to evaluate potential actions for the 1995 FCRPS Biological Opinion. This model was subsequently used for generating point estimates of potential actions associated with the 2000 FCRPS Biological Opinion. The following comments describe the serious limitations of utilizing the SIMPAS model:

- Many passage models have been employed over the years as a tool to compare alternate scenarios in a qualitative sense. Using the models beyond the application in a relative sense is inappropriate. The relations and point estimates used in these simple passage models are far too simple to adequately capture the complexity of salmonid survival relations and are, therefore, inappropriate as the primary basis for management decisions.
- The NMFS 2000 BiOp recognizes the limitations in the use of the SIMPAS model and therefore caveats the SIMPAS results because the model does not account for the potential effects of various fish passage options (such as spill) on forebay passage in terms of reducing delay, residence time, or predation.
- The SIMPAS model was not designed to make inferences about the likelihood of adult returns (see Caveats to SIMPAS Modeling Results, NMFS 2000 BiOp). This is due, in part, to the fact that SIMPAS simulations were not designed to include delayed hydrosystem mortality, i.e., "extra" mortality. This class of models has limited application for realistically predicting the overall effects of an action on salmon survival.
- SIMPAS is calibrated to reach survival estimates from primarily high flow years. Even the lowest flow year in the data set used extrapolations for a shorter reach in 1994. In 2001 NMFS recognized that this direct survival estimates are too optimistic for low flow conditions expected in 2001.

- A key concern is that although SIMPAS assumes NMFS' BiOp values of delayed mortality for transported fish ('D') it does not explicitly consider delayed (d') or "extra" hydrosystem mortality that is common to both transported and in-river migrants.
- SIMPAS survival estimates do not simulate historic stock performance (see April 20, 2001 letter) (attached to Attachment 3).
- Considerable evidence suggests that the source of "extra" mortality, which occurs in the estuary and early ocean, is related to earlier hydrosystem experience, i.e., delayed hydrosystem mortality (Budy 2001; Sections 3.3.1.1. and 3.3.1.2. in ODFW 2000). Evidence from the literature suggests numerous mechanisms that would explain this delayed mortality in relation to a fish's experience through the hydrosystem. Based on recent tagging data, there is direct evidence of delayed mortality by route of passage through the hydrosystem, including transportation and in-river routes (specifically collection/bypass). Spawner and recruit data demonstrate that there is a portion of delayed mortality specific to Snake River spring/summer Chinook stocks that is coincident with the completion of the hydrosystem and greater for upriver stocks relative to downstream stocks (Fig. 1, 2, 3 in April 20, 2001) (attached to Attachment 3). In addition, life-cycle survival for Snake River stocks is associated with annual smolt passage conditions; mainstem flows, and spill (Fig. 1 and 2 in State of Idaho 2000). The April 20, 2001 analysis (referenced in the first paragraph), regarding spill ignored this critical assumption in SIMPAS, and is completely discounted these delayed impacts of eliminating spill on population viability and recovery.
- The SIMPAS model only looks at one snapshot during the migration of spring and fall Chinook as well as steelhead. Furthermore, the model only takes the seasonal average flow. Reviewing the method used in the model to evaluate flow and survival, increases in flow are under-evaluated. The technique used downplays the importance of flow on survival. With the current flow survival relationship used in the model, only large scale flow changes would generate a response in the model, however with the imposed limitations for the reference case it is not possible to generate large enough flow changes to significantly alter the seasonal average flow compared to the base case. The result is that benefits from the small increases in flow in the reference case do not show up in the survival gap. A better method would be to incorporate water particle travel time as a surrogate for a flow survival relationship. Furthermore CRITFC staff would suggest that NOAA review the use of the FLUSH model for future flow survival relationships.
- Furthermore, the model SIMPAS only looks at one snapshot for the entire season, and then assumes the best case operation for the one time. Research indicates that Fish Guidance Efficiency decreases during the late fall. Furthermore, turbines do not always operate at the peak efficiency, such as spinning reserve, and with BIT concept outlined in the BiOp there will likely be even more excursions from the

best operating point since the BIT will be an even smaller operating range. The model only evaluates the best possible operation for the entire hydrosystem and estimates a single point. A range or confidence interval around this estimate is crucial to insure the decision makers understand the wide range of risk that exists when using this modeling approach. Furthermore the model should have a time-step component to capture the variability across the migration season; a bi-weekly would be a likely starting point.

- Lastly, the point estimate that is generated from the SIMPAS model implies that all the data used in the model is of equal precision, which is hardly the case. The individual range of uncertainty around each input parameter varies greatly. Normally when only a few parameters are changed to conduct an evaluation, this provides a crude method of dealing with differential uncertainty around all the parameters. However, the Reference and the UPA operations are built on completely different inputs. While the reference is somewhat limited in the change over the environmental baseline, most of the inputs are based on past research. The UPA however, is based on best professional judgment which can be characterized to a large degree as pure speculation, with little or no information to support the claims. Unfortunately, for the UPA, the inputs were generated without regional input other than the three action agencies. Considerable difference in opinion exists between interrupting the current science and the extrapolating what might occur among the regional agencies. This modeling only represents one narrow view on the potential outcome of the UPA compared to the Reference case.

We urge NOAA to heed the advice of the Independent Scientific Advisory Board (ISAB), which commented on the use of SIMPAS on April 19, 2001. The ISAB urged caution in the emphasis placed on the model results and noted some specific limitations:

“While the assumptions behind the input values used in the modeling are consistent with the available data, and are also consistent with professional judgment of many scientists (they represent committee consensus), these are only "point estimates" and are subject to a considerable degree of uncertainty. For this reason, it is not appropriate to develop a long-range management plan just on the basis of results from assuming that these uncertain estimates are true. "Best science" under these circumstances would explore the results from a range of assumptions corresponding to the range of the uncertainty. "Best professional judgment" under these circumstances would recommend a course of action that was predicted to perform acceptably throughout the range of predicted possible outcomes. "Precautionary" best professional judgment would be sensitive to plausible worst cases within the range of predicted possible outcomes. Although not possible before decisions must be made this year, the importance of uncertainty in assessments of this type needs to be evaluated carefully.”

Upon review of the full model, we note that several of the calibration runs used to estimate pool survival using the most precise information for project survival have resulted in pool survival estimates of 100%, meaning that no mortality occurred in the

pools. We find this to be at odds with existing data. This error suggests that the project survival estimates are exaggerated, and calls into question the validity of the modeling.⁹ In light of this critical error, NOAA should re-evaluate the use of this model in its jeopardy determination.

The Draft BiOp's analyses also contain problems with specific values used to "model" survival benefits under different operational scenarios. Many of the changes made between the reference action and the UPA appear speculative, uncertain and overly optimistic.

For a more detailed critique of the SIMPAS model, we incorporate by reference the comments we provided during the 2000 BiOp discussions.

2. Model Inputs

The Draft BiOp's analyses contain problems with specific values used to "model" survival benefits under different operational scenarios. Many of the changes made between the reference operation and the UPA appear to be speculative, uncertain and overly optimistic. While many of the differences in the modeling parameters are somewhat small, the sheer number of them can result in a large overall impact. Further, since the estimated gap is relative small, it takes very little tweaking of the numbers to close the gap, even if the numbers used to close the gap are based on highly speculative and highly optimistic results in future years.

Many of the inputs used in the modeling are based on numbers that showed no statistical difference when evaluated against a control in the evaluation. However, these numbers were still employed in the modeling. This leads to hypotheses that are not grounded on scientific information. This is not an appropriate scientific method that should be employed when modeling

The draft BiOp lumps predicted reductions in survival in averages across all ESUs. This fails to identify differences in impacts of the FCRPS to different ESUs and contradicts section 6.1.3.1.5 of the draft BiOp.

Fish guidance efficiency (FGE) at Bonneville Powerhouse II.

This has been an ongoing project and some benefit has been shown in FGE, however, the operation of the corner collector at Powerhouse II will alter the FGE the powerhouse. The improvement from 0.48 to 0.60 for steelhead and spring Chinook and 0.28 to 0.4 for fall Chinook is a best case scenario for a unit that is unaffected by corner collector operation. In reality, however, the average FGE for Powerhouse II will be much lower, especially during the summer when few units will be operating and the hydraulic effect in the forebay of the corner collector will be greater.

Sluiceway Efficiency.

⁹ As a result of these calculated pool survivals, one cannot match project specific data to reach survival data and then use that information to back-out pool survival.

An improvement is cited in the UPA for the corner collector at Bonneville powerhouse II of 0.70 from 0.62 for steelhead, but there is no improvement noted for the other species.

The sluiceway at Powerhouse I.

The 0.22 guidance efficiency for steelhead and spring Chinook appears to be high. Furthermore, the survival estimate of 0.92 in the reference case is then increased to 0.98 in the UPA case. While we hope this is achievable, there is no indication of what modifications will be made to increase the survival by six percent. If relocation of the exit is contemplated, the likelihood of completion by 2010 is nearly impossible. Furthermore, the Columbia River Fish Mitigation Budget (CRFM) does not even have a place holder for this item in any of the long-term budgets that project funding through 2010. Also, the CRFM budget level has been decreasing over time with the average level in the past few years in the 70 million dollar range. To meet the 2010 time line for all the items in the current budget and not add in items such as sluiceway relocation at Powerhouse I, the budget level will need to be increased upwards into the 100 to 110 million dollar range. The likelihood of an increase in the CRFM budget is extremely low.

Diels in the model.

We are unable to ascertain why the diels seem to randomly vary between the reference operation and the UPA operation, considering that the overall operations are fairly similar at the projects where the diels appear to fluctuate.

Turbine Survivals.

This parameter is very troubling given that the biological index testing (BIT) is currently purely conceptual. While we support operating a turbine to achieve the best survival for migrants, it is highly questionable if any benefit will be generated from BIT initiation. Further, this is an operational change that could easily be initiated now at several of the projects where studies have been completed, and could therefore be covered under the reference operation. We do not understand why it is not. We are also concerned that when the region compared new minimum gap runners (MGRs) to the old standard turbines, there was no statistical difference in survival between the two units. This is troubling since the BiOp assumes an improvement in fall Chinook survival of 13% at John Day, and anywhere from 1-3% where used at other projects for the other species. At this time, no evaluation or tests have been conducted to validate these estimated improvements. Even more troubling is that, through our discussions within the regional forum, we are becoming aware that other mechanisms such as rapid pressure changes in the turbine environment may be a leading cause of injury and mortality, as well as a factor leading to increased predation. If this hypothesis is proven to be true, it is unlikely that turbine modifications will lead to any real improvement in survival. Only major structural modifications will improve survival numbers, but major structural modifications are not discussed in either the BiOp or the UPA.

Spill Survival.

We are unclear why NOAA used 0.93 for spillway survival and 0.98 for removable spillway weir (RSW) survival for Lower Granite. The 2003 Lower Granite research,

which is the only survival data we have for any RSWs, showed no statistical difference between the RSW and standard spill survival. However, the study itself was not set up to evaluate standard spill survival, and there was a wide range confidence interval associated with the survival estimate. There are several past years of data that indicate that survival through Lower Granite spillway is much higher – closer to the .98 assumed for the RSW. If we look at the average of survival or at studies that were designed to evaluate spillway survival, a much higher value than the 0.93 that was used in the model would be reached. If this proves to be correct, then there is no real benefit to any RSW at Lower Granite, which is a cornerstone to the overall hydro-system improvement. The only benefit that RSW can guarantee is a reduction in spill. Reviewing the reference operation at Little Goose, the RSW may actually reduce survival since spillway survival is reported to be 100% as opposed the 98% survival for the RSW. If this is the case, 24-hour spill would appear to be the better choice. Additional studies, however, need to be conducted.

Furthermore, it is unclear how the information collected for Lower Granite has been applied at the other future locations for the RSWs. We have seen that the further down river the migrants are, the more divergent their behaviors; therefore, fish guidance efficiencies at Lower Granite are likely not characteristic of what is occurring farther down the river. We take exception that this information was used carte blanche, without any consideration of how behavior changes as the fish migrate and react to other locations on the river.

We are also greatly concerned that, between the reference operation and the UPA, spillway survival estimates at other projects were altered without valid reasoning. Further, assumed improvements are not attributed to structural changes but rather to operational changes in the volume of spill that is passed through the individual spill gates i.e. “bulk spill” operations that concentrate the same amount of spill through fewer spill gates. We are concerned that the UPA is assumed that bulk spill volumes of spill will decrease the potential injuries for migrants due to interactions with the shear zone as well as potentially increase the contact of migrants with the concrete spillway. This is purely speculative. None of the research conducted to study this issue has proven that changes in the volume of spill passed through a spillway will increase spillway survival. The methods used to conduct the research have been shown to be biased and therefore any information from them is not applicable to natural migrating juveniles. Even if this hypothesis is proven to be true, this action should be considered under the reference operation as well as but not exclusively in the UPA case.

The reference operation was unduly constrained. Spill for fall Chinook at the collector projects was not considered, and the status quo was maintained. However, after reviewing smolt-to-adult information, it appears that in-river migrants do as well if not better than transported fish. This supports the position that a true “spread the risk” policy should be employed. A 24-hour spill operation at McNary should be considered for the fall season as well. Currently the only daytime spill that is provided is due to forced spill. However, the COE and BPA are both evaluating new turbines to increase the hydraulic capacity at McNary. If these new turbines are implemented, then any forced spill under

the current modeling in the BiOp would be reduced or eliminated. However, the BiOp does not discuss future operations or how NOAA will reconcile the change in project survival that will occur if the new turbines are implemented.

Lastly, the reference operation did not consider evaluating spill to 125% TDG levels, a 5% increase over the current waiver for the tailrace. Such an evaluation would aid in dealing with increasing flows and meeting flow targets since this would help reduce the bottle neck for flood control flows. There is a continuing body of research that indicates that 120% does little to impact juvenile migrants. Further the critical level of gas appears from evaluating the data to be above the 125 to 130% level. Recent adult telemetry research (Perry et al, 2004) indicates that adults migrate at depth and experience an approximate 20% hydrostatic compensation, and only briefly did the majority of the adults spend any time above the 2 meter level to afforded them this level of protection. Analysis offered by the Fish Passage Center indicates that juvenile chinook survival in spring of 1994 with a 10.5% spill level at Lower Snake dams was 0.698; the survival of juvenile chinook in spring 1996 though the same Lower Snake dams at a 24.7 % spill level was 0.857 (DeHart 1999). Increasing allowable TDG levels to 125% would greatly increase the amount of spill that can be provided at individual projects.

CRITFC believes that spill would result in greater juvenile survival and overall stock productivity because indirect and delayed mortality is less for spill than for turbine or screen system passage.

Bypass Survival.

Staff once again does not understand the improvements that are added to the UPA case for bypass survival, most notably at McNary, an increase of 2% across all species, and 2% at John Day for spring Chinook and steelhead, and 4% for fall Chinook. First and foremost there are only two feasible options to improve bypass survival, 1) move the outfall, or 2) change powerhouse operations to improve tailrace egress. Option 2, is an operation change that can be implemented immediately and once again should be applied to both the reference as well as the UPA case. For option 1, CRITFC has concerns whether this will be accomplished within the time frame outlined in the BiOp, or UPA. The CRFM does not even have a place holder in the budget for these items in any of the long term budgets that project funding through 2010. Also, the CRFM budget level has been decreasing over time with the average level in the past few years in the 70 million dollar range after dealing with savings and slippage. To meet the 2010 time line for all the items in the current budget and not adding in bypass relocation at these locations, the budget level will need to be increased upwards into the 100 to 110 million dollar range. The appreciable likelihood of an increase in the CRFM budget is extremely low.

The Dalles FGE.

It appears that the FGE used for the The Dalles underestimates the number of migrants that used the spillway when reviewing past passage reports. This is a minor adjustment that should be made.

Pool Mortality.

The flow pool survival relationship is confounded by delayed mortality associated with route of passage at dams, which is not taken into account in direct measures of survival. Pool survival is derived by dividing project survival by dam survival. This yields separate pool and dam survivals for modeling purposes. And because dam survival is accounted for by route specific survivals which are based on survival of passage only (i.e. direct survival), any latent or delayed effects of passing through turbines for example, is then accounted for in the flow pool survival relationship. In other words, assigning a benefit to flows based on pool survival may not adequately explain the delayed effects of fish passage through the dam.

Further, the pool mortality is estimated from a reach and then a per/mile survival is estimated and applied to pools based on a length basis. However, as we have discussed before water particle travel time would be a more appropriate method to estimate pool mortality. It would seem feasible that the relationships used in FLUSH for water particle travel time and survival could be used as a starting point to estimate pool survivals for the analysis.

Additional Modeling Comments

We were encouraged to see that NOAA staff has done some non-standard thinking by looking at pool elevations of 1.5 ft above Minimum Irrigation Pool, MIP. However, we are uncertain how the pool survival benefit was calculated under the lower John Day pool scenario. It appears that water particle travel time was used to estimate the benefits of survival by a direct comparison. However, this is not an adequate method, a relationship exist for water particle travel time and improvements in survival that is non-linear. One needs to determine this relationship and then apply the result to the pool survival parameter in the model. The FLUSH model identifies these relationships and could be used as a guide to estimate this relationship.

Further the concept of reservoir drawdown should be explored at other projects. The potential survival benefits in reductions of pool mortalities are important to have captured in the analysis, to ensure a reasonable survival gap analysis is conducted.

Reviewing adult return data it is apparent that few if any juveniles transported from Lower Monumental, LMN, return as adults. Therefore it would seem prudent to utilize other methods to increase the rate of SAR's for the migrants at LMN. Further, it appears that the same could be said for fall Chinook juveniles at McNary. This would lead us to conclude that other passage routes should be prioritized at these projects to increase adult return rates.

CRITFC's, over arching concern is that all these inconsistencies between the baseline reference operation and the UPA operation do not represent the best available scientific information. The reference operation was artificially limited in its scope to generate a smaller gap or lowering of the survival bar. The UPA then was artificially inflated to produce a higher level of survival than it will actually produce to close the survival gap

3. Delayed Mortality

The Draft BiOp fails to reference the Plan for Analyzing and Testing Hypotheses (PATH), and literature citations from PATH relevant to the subject of delayed mortality. (See attachment 10) The results of these major scientific studies need to be incorporated into the actions in the updated BiOp, particularly since these studies were undertaken under previous FCRPS BiOp processes and produced information applicable to the 2004 BiOp.

New scientific information is available regarding the extent of delayed mortality for in-river migrant Snake River spring/summer Chinook from recently published workshop proceedings of the Comparative Survival Study (Attachment 1. also available at: <http://www.fpc.org/>). The CSS workshop proceedings (Marmorek et al. 2004) present a scientific weight of evidence analysis for the degree of support for mechanisms that may cause delayed mortality, based on review of relevant literature and data. The CSS workshop proceedings also concluded that results from the updated analysis suggest that this delayed mortality for Snake River spring/summer Chinook populations has remained high in recent years. The PATH "Delta life cycle model" was updated with spawner and recruit data of Snake River and John Day River stocks for additional brood years 1991-1998. The Delta model produced estimates for common year-effects (d), differential mortality between upriver and downriver stocks (μ), and intrinsic productivity and carrying capacity (Ricker α and β parameters). From the estimates of μ we can derive an estimate of λ_n , which is a post-Bonneville survival factor for non-transported smolts. For spring/summer Chinook, this variable is estimated by accounting for system survival parameters used by NOAAF in the 2004 BiOp jeopardy analysis (in-river survival, proportion transported and "D"). Snake River stocks survived only 20% as well as John Day stocks over this period ($e^{-\lambda_n}$). The updated estimates of delayed mortality of in-river migrants ($1-\lambda_n$) from the Snake River averaged 81%, after accounting for direct reach survival and differential transport survival "D" (Marmorek et al. 2004). These estimates are generally comparable to earlier results from PATH, and contrary to speculation in the NOAAF December 2003 draft technical memo (Williams et al. 2003) that delayed mortality was now much reduced.

The common year effect, differential mortality and delayed mortality estimates derived from spawner and recruit information is further supported by smolt-to-adult survival rate (SAR) comparisons from Snake River spring/summer Chinook and downriver spring Chinook populations. IDFG (2004a) commented on these data sets and NOAAF's exclusion of consideration of this evidence from the May 6, 2004 draft hydro effects memo (Williams et al. 2004). IDFG concluded that upstream/downstream differences in SARs should be used as one method to empirically estimate hydrosystem caused latent mortality of upstream stocks, and provided supporting language, which NOAAF had agreed during collaboration (p. 2-3) to incorporate in the final hydro effects memo.

4. Comments on Section 6.2.1 -- Results Common to Multiple ESUs

6.2.1.1 Flow

The differences in spill and flow levels between the UPA and the reference case are significant. Additional spill will create more normative conditions with respect reduce predation and better temperature and turbidity regimes at least within the tailrace of dams. The draft BiOp does not provide any analysis of the affect of higher flows on the mainstem and estuary despite the fact that the estuary and at least some of the mainstem has been mapped and quantitative data regarding habitat changes over different flow regimes is available. The draft BiOp fails to include the findings of the National Research Council in their report, “*Managing the Columbia River: Instream flows, water withdrawals and salmon survival*” (NRC 2004) that concluded that when flows become critically low, such as in the UPA, pronounced changes in salmon migratory behavior occur and lower survival rates are expected.” Similarly, consistent with the findings of the ISAB (2003) it would be expected that the negative impacts of power peaking and diel swings in river flow indicated elsewhere in these comments would be more pronounced under the UPA than the reference case and would result in lower juvenile survival. Under the UPA, the river would be more lentic leading to increased algal blooms and biological oxygen demand and thus a reduction of lotic ecological factors such as macroinvertebrate diversity would be expected. Again, the draft BiOp fails to consider these differences.

6.2.2.2.1 Delay and Delay induced Predation

The draft BiOp states that high rates of spill have been shown to delay adult passage, but offers no reference for this claim. Radio telemetry studies by the University of Idaho showed that there was little if no delay for adults passing Snake River dams during high flow years in the 1990s. It is likely that if additional fishway entrance attraction flows were provided, delays in adult fish passage would be minimal if any. The draft BiOp fails to require the Action Agencies to install additional attraction flows at FCRPS fishways- an outstanding issue that was identified in the 1995-1998 BiOp.

With respect to pinniped management, NOAA recently made CRITFC representatives aware that the Marine Mammal Protection Act will be open for reauthorization in 2005. The final BiOp should identify specific provisions for reduction of pinniped predation on listed ESUs for potential reauthorization of the Act. Tribal peoples have harvested pinnepeds in the past and consideration should be allowed to continue the practice consistent with their treaties and protection of the listed ESUs.

6.2.2.2.2 Water Quality Effects on Adult Passage Survival

The draft BiOp fails to compare the qualitative differences in water quality parameters between the UPA and reference case. Differences in water temperature between the two cases could be determined by various available data and models (i.e. EPA model and CE-QUAL-2). The impacts of these physical differences on adult survival, prespawning mortality and gamete viability could be at least be qualitatively assessed using the available literature (see McCullough 1999; McGie 1992).

6.2.2.2.3 Fallback and Volitional Downstream Passage

The draft BiOp fails to identify the dam navigation locks as an adult fallback route. The draft BiOp claim that total adult survival is the same under spill and no spill conditions is

based upon an evaluation using an extremely small sample of eight adults that fell back and then reached upstream tributaries. We contend, as well as the federal agencies did in their 2004 summer spill proposal, that there is very little information to base this on as well, yet the Draft BiOp makes the claim that fallback without spill is not a concern. We refer NOAA to the University of Idaho draft report *Evaluation of Adult Salmon and Steelhead via Juvenile Bypass Systems at Bonneville, John Day, McNary and Ice Harbor Dams: 2000 -2001*. In this report the researchers state that 25% of adult fish that fallback through a bypass system are lost to due unaccountable factors. Further, adult salmon mortality through turbines has been estimated from 22% -51% (Wagner and Ingram 1973; Buchanan and Moring 1986; Liscom and Sturehnenberg 1985).

This indicates that reducing spill and forcing more fish through juvenile screen bypass systems and turbines would be detrimental. Reviewing juvenile monitoring data at the dams during 2001 under no spill conditions indicates that adults were present. For example, at the McNary juvenile bypass system several hundred adults salmon per week are present. Further, the Corps' 2004 Fish Passage Plan for John Day requires dewatering of the juvenile bypass system to remove and enumerate adult fallback during the summer migration. Therefore, while the radio tag information in the draft BiOp that uses extremely small sample sizes does not indicate loss of adult escapement from significant fallback during levels of reduced spill, actual data from the juveniles bypass system indicates that there is direct mortality when spill does not occur. The draft BiOp failed to consider this best available science and instead presented speculative conclusions based upon extremely limited data.

6.2.2.2.4 Kelts

As stated elsewhere in these comments (5.2.2.4), kelt survival under a no-spill condition is very poor and contrary to the draft BiOp, the available literature indicates that substantial numbers of kelts outmigrate seaward in the spring (see comments to 5.2.2.4 above). With the available radio telemetry data, NOAA could provide a reasonable estimate of the difference between kelt survival under the reference and UPA cases, but this was not done.

Given the above substantial differences between the reference and UPA cases in adult survival and potential impacts on spawner success, there is no basis in the draft BiOp for saying there is no difference. NOAA has failed to use the available scientific data to evaluate the differences, and uses an extremely small proportion of the data available to make speculative conclusions.

6.2.2.2.5 Mainstem Passage Improvements as a Result of 2000 BiOp Implementation during 2001-2004.

Adult passage survival goals

The draft BiOp states that adult survival through the hydrosystem is the same as under natural river conditions, but provides no reference to this claim. As noted above, even if this were true, this does not equate to successful spawning in natal spawning areas due to, among other things, indirect impacts of passage through the hydrosystem including elevated temperature impacts on gametes, increased energy demand to ascend multiple

dams, lack of critical holding habitat in the mainstem and estuary, impacts of gas bubble trauma under very high flows, and selection against adults that fallback through turbines, screen systems and navigation locks. As stated in the 1995-1998 and subsequent BiOps, a host of adult fishway improvements are needed in general with specific actions needed at individual dams, including but not limited to increased attraction flows, temperature control in fishways, extension of fishway exits to reduce fallback, and new fishway designs that reduce adult energy expenditure (see Orsborn 1987). Contrary to the draft BiOp, the job has not been completed on adult fish passage through the FCRPS.

Reclamation has failed to produce the 427 Kaf from the upper Snake Projects every year from 2000-2004 that has been identified in prior FCRPS BiOps as important to maintain critical habitat and increase juvenile and adult salmon survival.

The lack of 2000 FCRPS BiOp spill in 2001 was due to a BPA financial emergency, not a power emergency as the draft BiOp states.

Dworshak Hatchery modifications have been completed but the USFWS claims that additional improvements are needed before the full range of temperature control is available from Dworshak Reservoir, thus, this operation is constrained. The draft BiOp fails to note this problem.

The RSW at Lower Granite has not been tested for summer migrants, SR sockeye, UCR spring chinook or UCR steelhead so it is unknown at this time if the structure is beneficial or harmful for these ESUs. The draft BiOp is extremely speculative in stating the structures are beneficial and these structures should not be built until the full range of evaluation on all SR ESUs are completed at Lower Granite.

The draft BiOp fails to note that LCR Chum are continually subjected to power peaking flows from the FCRPS that limits spawning habitat and can dewater redds.

While it is true that tens of millions of dollars have been spent on FCRPS research, the bulk of these dollars have been spent to generate project and reach specific juvenile survival estimates. Key elements regarding the affect of the FCRPS on ESU survival and productivity remain uncertain. These include, among other things, impacts of the FCRPS on: SR sockeye, adult spawning success, delayed mortality through different passage routes, comparative survival of transported vs in-river summer migrants not subjected to impacts of dam screen passage, and prospective analyses of lifecycle impacts and productivity for all ESUs under different hydrosystem configurations and operations. It is critical that research be aimed at measuring parameters that are sensitive to change, such as adult timing and distribution to the spawning grounds and timing of juvenile entry into saltwater (Lichatowich and Cramer 1979). The draft BiOp lacks a framework based upon state-of-the-art experimental designs and aquatic monitoring frameworks to evaluate the efficacy of FCRPS actions as described in MacAllister and Peterman (1992) and Peterman and Antcliffe (1993).

Operations and maintenance funding has largely been directed toward juvenile transportation. Many adult passage facilities are antiquated and remain in disrepair and in need of spare parts to avoid breaking down during critical passage periods. Specific recommendations have been included in CRITFC's annual River Operation Plans, but have been unheeded by the Action Agencies and NOAA. For example, lack of operation and maintenance funding has prevented the timely full overhaul of spill gate hoists at McNary Dam. This causes poor spill patterns that impact salmon passage at McNary. The Corps' priority to install uncertain and untested RSWs has left many critical maintenance projects unfunded.

As stated elsewhere in these comments and in the draft BiOp itself, bird predation as a whole in the Columbia River has not been reduced. For example colonies have been expanding just below Hanford Reach. Terns have simply located themselves on other estuary habitat and are still preying on juvenile salmon in significant rates.

6.2.3.1 Annual Implementation Plans

The draft BiOp states that NOAA will not issue formal annual Findings Reports as called for in the 2000 FCRPS BiOp. Where is the evaluation part of adaptive management framework and where is the accountability for FCRPS actions taken? The failure of NOAA to implement adaptive management in the draft BiOp has already manifested itself with respect to the call to maximize transportation of SR fall chinook in the face of solid data and scientific evidence that this ESU should be allowed in-river migration under spill and augmented flows through the FCRPS.

The draft BiOp proposal to allow modifications of river operations on an annual basis via "offsets" with the merits derived with the exclusive use of the SIMPASS model disregards a year's worth of evaluation and litigation surrounding the 2004 summer spill curtailment proposal by NOAA and the Action Agencies.¹⁰

If NOAA is incapable of quantifying the merits of non-hydro actions for the draft BiOp, why would NOAA be able to quantify the merits of non-hydro actions for annual planning? Further, the non-hydro actions were to be implemented as part of the original jeopardy analysis for the 2000 BiOp. Using them as an offset for FCRPS actions is double counting them.

It is impossible to accurately predict river runoff early in the season. River operations are variable and may change dramatically depending on both the volume and timing of runoff and climatic conditions. For example, as has happened in past years, a warm spell in the early spring can cause a quick release of snow melt into the system which might prompt the Corps to evacuate storage reservoirs. Then, shortly after, a dry period may ensue that will cause a severe conflict between maintaining spring flows and refilling storage reservoirs for summer flows.

¹⁰ Again, NOAA refuses to acknowledge the serious limitations of the SIMPASS model previously described in these comments.

Thus, it is impossible to predict with any certainty how river operations are going to be conducted in any given year. Thus, any model exercise based upon river and climatic conditions would be entirely speculative and actions to reduce FCRPS survival could have a greater impact to listed ESUs than predicted.

As noted elsewhere in these comments, examining only the downstream juvenile survival metric only looks at the tip of the iceberg with respect to ESU survival and productivity. Each annual implementation plan should contain updates for each ESU with respect to smolt-to-adult returns, recruits per spawner, fecundity, and other critical productivity metrics.

6.2.3.2 Comprehensive Evaluations in 2007 and 2010

The draft BiOp eliminates the 2005 comprehensive check-in required by the 2000 BiOp and replaces it with a 2007 evaluation. This obviously has the affect of delaying the evaluation of FCRPS actions begun in 2000 two years and is contrary to adaptive management where expedient evaluation of actions reduces the risk of “surprises” and irreversible impacts (Hilborn 1992).

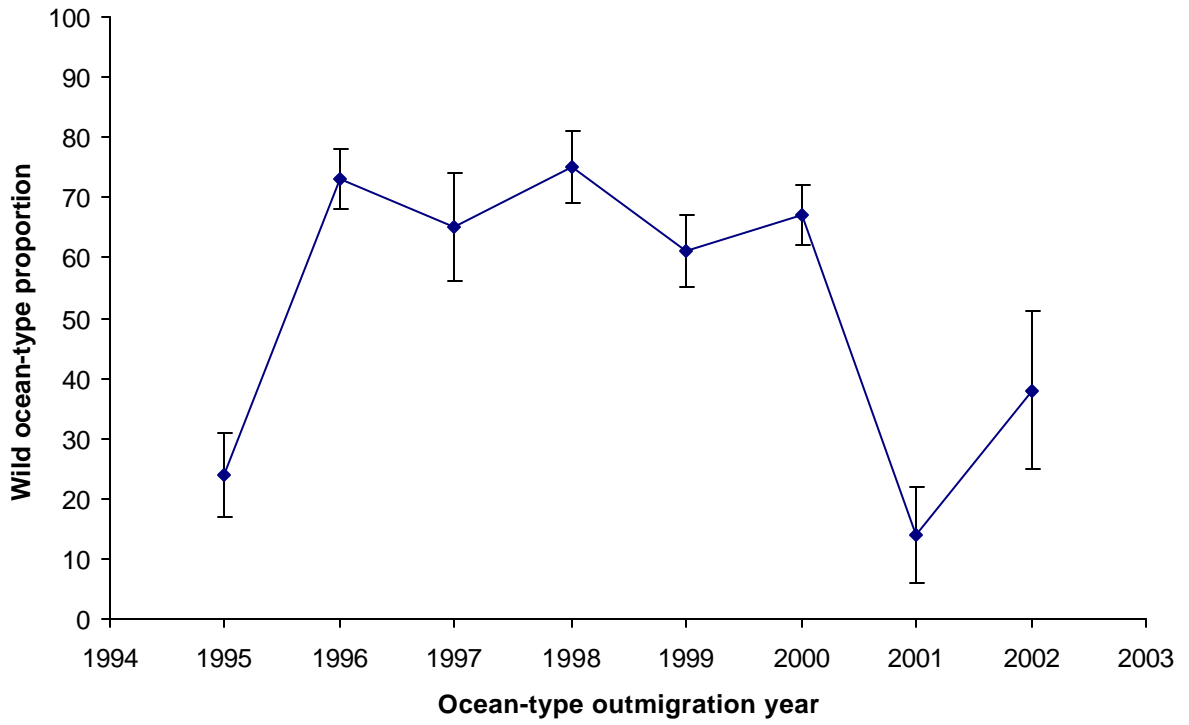
Table 6.6 Estimated average survival rates

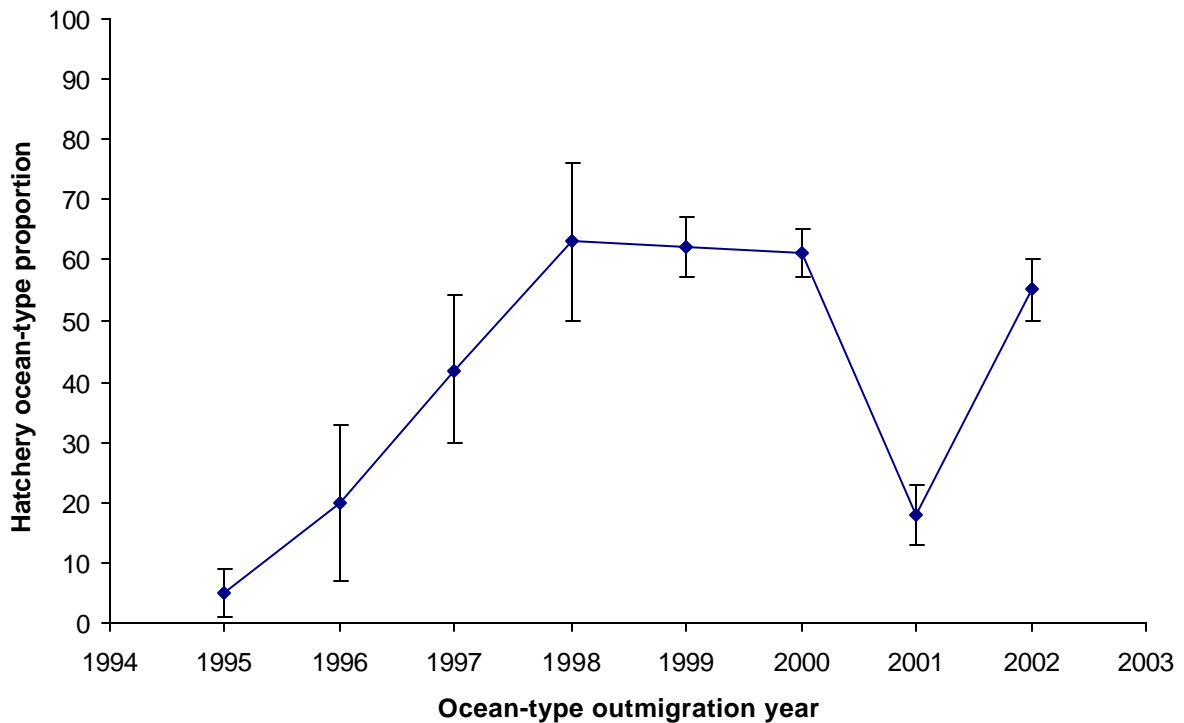
The estimated SR fall chinook juvenile in-river survival rate in this table under the UPA does not comport with the estimated rates in the July 1, 2004 NOAA Findings letter. In the letter, the range is 1.5-13.5 % survival compared to 9.1-22.9% in the table. The average survival in the letter for years 1995-2003 is 9.6% compared to 14.4% in the table. The table survival rate average make it appear that the 2010 performance standard of 14.3% survival has been met, but this does not comport with the 2004 findings letter.

5. Fall Chinook

The effects of the action on – and related operation of the system for – fall Chinook are based on a faulty analysis. The BiOp references a new publication (Connor et al., 2004 *in print*) that discusses life histories for fall Chinook. Draft BiOp at 6-50. The paper and the BiOp identify an ocean-type fall Chinook life history that would represent what is currently referred to as the fall Chinook sub-yearling. The paper then goes on to discuss what it calls a reservoir style fall Chinook. This is one where instead of migrating in the late summer and early fall, the fall Chinook remain in the river system and complete their ocean migration the following spring. While we do not contest that this does occur, we are concerned with implication that a large majority of the migrants display this behavior. Referring to the charts below it is apparent that percentage of reservoir fall Chinook is highly variable for both wild and hatchery Chinook. What is more interesting to note is that reservoir migrants represent a large majority of the run when in river conditions are poor. Therefore the ocean-type proportions may simply function as an index of flow and inriver survival conditions for the ocean-type migrants. Further, flow and survival conditions in the following year (for the yearling component) may also be influencing these proportions. Both 1995 and 2001 provided sub-optimum conditions for in-river migration. The increase in reservoir Chinook migrants could be an indication that in river conditions were so poor that the ocean migrants suffered catastrophic mortality and

by default the only adults returning were the ones that did not migrate during the poor river conditions.





Furthermore, reviewing a paper by the same author, Connor et al. August 2002 in the North American Journal of Fisheries Management, the paper concludes that the majority of the reservoir type Chinook appears to originate in the Clearwater. The Upper Snake reach accounted for no more than a couple of percentage while the Lower Snake had more variation with an average of nearly 9% for the years of 1994 to 1999. A high 18.5 occurred in 1996 which was a cooler and higher flow year than normal. The Clearwater averaged 52.7% for the years 1992 – 1994. As the paper indicates this is related to river temperatures and this matches with current reservoir operations at Dworshak that aid in making this reservoir type life history possible. Therefore this life history only is really possible in the areas where cool temperatures occur during the rearing stage of the fall Chinook. If it was not for the creation of the reservoirs from the construction of the hydro electric projects this life history would not exist.

It is obvious that yearling fall Chinook will return at higher rates than sub yearlings. However, whether this is an improvement in management operations is highly debatable, since the yearling fall Chinook come from the sub yearling population and we do not know what mortality rate they experience before becoming yearling Chinook. If in river conditions were improved for the sub yearling migrants this would be an even greater boost to the overall fall Chinook population since more ocean migrants would survive.

6. Failure to account for changing ocean conditions

The Draft BiOp clearly relies on recent increases in adult returns to conclude that range-wide risks have been reduced, at least in the short term, in support of the no-

jeopardy determination. E.g., Draft BiOp at 8-7. The BiOp however cautions (at 4-3) that “even under the most optimistic scenario, increases in abundance [due to recent improved ocean conditions] might be only temporary and could mask a failure to address underlying factors for decline. It is reasonable to assume that salmon populations have persisted over time under pristine conditions through many such cycles in the past. Less certain is how the populations will fare in periods of poor ocean survival when their freshwater [including FCRPS effects], estuary, and nearshore habitats are degraded.” Despite this admission, the BiOp fails to provide any consideration of or buffering for changing ocean conditions.

Appendix B to these comments, Comments on Ocean Conditions and Flows, reviews Draft BiOp Appendix D and makes the following observations regarding ocean conditions:

- no attempt is made in the Draft BiOp to factor in the effects of the Pacific Decadal Oscillation which gages abundance of salmon populations as a function of multivariate ocean conditions and long term climate regimes.
- assuming “good ocean conditions” is a poor assumption at this point in time
- RE: Draft BiOp Appendix D, Attachment 1: The 3 point flow average used in the analysis fails to account for ocean conditions; there is no mention of how the study flows selected relate to inter-annual and decadal conditions. A better analysis would be to run an ensemble hydro model that can produce dozens of time series traces.

See Appendix B for additional comment and detail.

7. Additional Comments

As noted with regard to the Baseline, the Draft BiOp fails to consider effects of contaminants and particularly those contaminants associated with the FCRPS turbines (i.e., oil). NOAA should investigate the extent to which oil contamination is related to increased turbine use and allocate such impacts to the effects of the Actions. Appendix D, *PAH Impacts to Salmon*, provides some discussion on the effect of such contaminants on salmonids.

EFFECTS OF OFF-SITE MITIGATION:

As noted above regarding the proposed action, CRITFC has concerns with the certainty and benefits attributed to off-site mitigation actions. We are also concerned about how these benefits are credited to the proposed action as mitigation.

The gaps NOAA estimated are to be met through offsite mitigation. Whereas the gap is quantitative, determining the degree to which offsite (habitat) actions offset the gap is determined in a qualitative process. The potential for mitigation is expressed as subjective categories such as “Low” “Medium” and “High” (see Table 6.9).

The qualitative analysis of off-site mitigation efforts is extremely inconsistent and therefore suspect. For instance, in Table 6.9, the Upper Columbia River Steelhead analysis for 2010 indicates a “L-M” for tributary habitat, a “L” for fish predation, and a “M” for bird predation all add up to a “M” combined non-hydro improvement. The Snake River Steelhead analysis for 2010 then also shows a “L” for fish predation and a “M” for bird predation, but it has a “VL” rating for tributary habitat, yet these also add up to a “M” combined non-hydro improvement. This example demonstrates the arbitrariness of the non-hydro analysis is very apparent.

Another example of the illogical qualitative conclusions relied upon in the Draft is the analysis of net effects for Snake River Sockeye as presented in Table 6.9. For Sockeye, the qualitative analysis indicates that production is having a high short term benefit, but “the current benefit would likely lessen over time unless a rapid increase in anadromous adults occurs.” Draft BiOp at 6-89. For this reason, the qualitative analysis rates production benefits in 2010 as “VL.” Draft BiOp Table 6.9. Despite this difference, and the identical “L” rating for fish predation benefits in 2004 and 2010 (the only other non-hydro benefit) the net effect of the combined non-hydro improvements is “L” for both scenarios. This does not make sense. Further, despite these differences and the only slight difference in gap effect from “L” in 2004 to “L(close to VL)” in 2010, the ESU net effect is reduce in the short term and no change in the long term. The logic here just does not play out, and the verbal explanation provides little clarity to support the determinations.

VII. CUMULATIVE EFFECTS

NOAA identifies only a few activities for consideration of effects as cumulative effects. The activities are limited because: (1) NOAA has very narrowly defined the action area, as noted above, which limits the tributaries in which deleterious actions affecting the listed fish may be considered in conjunction with the effects of the action; and (2) NOAA claims they must presume that there are no other deleterious actions occurring because co-managers failed to identify any such actions when requested to by NOAA in a November 26, 2003 letter. Draft BiOp 7-1. First, it seems outrageous that there would be *no* cumulative effects in the entire action area; and second, it is NOAA’s responsibility to search out these cumulative effects.

The discussion in the cumulative effects section is vague and merely lists activities without describing in any detail the likely effect of these actions, and whether NOAA even considers the actions to be worthy of the “cumulative effects” definition. When, however, it becomes time to consider the cumulative effect (in Section 8 – Conclusions), the Draft BiOp repeats for each species, “As described in Section 7.0, known projects properly considered as cumulative effects are not expected to significantly affect the status of this ESU in addition to the environmental baseline.” *E.g.*, Draft BiOp at 8-19.

VIII. CONCLUSIONS

Despite a combination of narrow gaps, wide gaps, no gaps and at best a nebulous process for deciding on the level of effectiveness and timeliness of offsite measures, NOAA appears confident that not one fish in the Columbia Basin is jeopardized by the continued presence and operation of the FCRPS (Table 8.1). Even Snake River sockeye, a stock that is entirely dependent on artificial propagation for its existence, is given a “no jeopardy”.

The Draft BiOp reaches the no jeopardy determination for all ESU’s through a qualitative determination of whether a bunch of qualitative factors add up to an “appreciable reduction” in the likelihood of survival and recovery of the listed species. While the Draft identifies the numerous factors to be considered, it gives no definition of just what constitutes an “appreciable” reduction. As noted previously, the 2000 BiOp at least defined its “jeopardy standard” to be met if the mortality attributed to the hydrosystem was below a level that, when combined with mortality occurring in other life stages, still results in a high likelihood of survival and a moderate to high likelihood of recovery (and then the 2000 BiOp actually applied metrics to this definition). In contrast, the Draft 2004 BiOp provides no explanation for an “appreciable reduction”. In effect, the jeopardy determination is just a “judgment call” by NOAA on the small gap effects attributed to the UPA, with slight consideration of various other factors.

While the Draft BiOp includes some narrative explanation, there is really no support for determinations due to the overly qualitative nature of the analysis. Moreover, NOAA relies heavily on the recent high adult return numbers to conclude that the proposed action does not cause jeopardy to species in the short term. *See, e.g.*, Draft BiOp at 8-10 (regarding SR Falls: “The question of whether the difference in juvenile survival during the first few years of the proposed action represents an appreciable reduction in the likelihood of survival and recovery is largely influenced by the recent trend in adult abundance.”) As noted previously, however, the analysis of the effects of the Proposed Action fails to consider or account for the high likelihood that ocean conditions will change from good to bad. NOAA Fisheries is taking the recent upturn in spring/summer Chinook returns as an indication that it has considerable freedom in its decision framework. That is, the agency appears to be unconcerned about whether its decisions actually offset negative impacts of the hydropower system since, ostensibly, the recent improvement in runs give it more flexibility in seeking restoration in the short-term. This is a totally mistaken viewpoint. The gains due to a period of high ocean productivity can be just as rapidly swept away. Productivity of brood years currently rearing in the ocean can be reversed by a sudden downturn in ocean productivity and returns could decline rapidly. Further, NOAA is claiming credit for the return of hatchery fish to hatcheries rather than returns to native habitats. CRITFC does not consider restoration effective unless natural habitats are filled, not just hatcheries.

The Draft BiOp fails to adequately consider the environmental baseline in the final jeopardy determination. The implementing regulations indicate that the “effect of the action” refers to the direct and indirect effects of an action *“that will be added to the*

environmental baseline.” 50 CFR § 402.02 (emphasis added). The same regulation then defines “environmental baseline” as including the “past and present impacts of all Federal, State, or private actions and other human activities in the action area.” (emphasis added). The Draft BiOp, however, (1) focuses only on the additional risk posed by the proposed action, rather than the total risk to the species considering the baseline (*see, e.g.,* Draft BiOp at 8-9 (“The main consideration in determining if the proposed action constitutes an appreciable reduction ... is the degree to which the proposed action poses additional risks to the ESU”)); and, (2) only considers the status of the ESU in the action area as the environmental baseline. NOAA’s conclusion fails to consider the present impacts of the FCRPS – the environmental baseline. Rather, than adding the effects of the proposed action to these effects, NOAA subtracts the reference operation effects out. Similarly, NOAA’s conclusion fails to adequately consider other factors included in the environmental baseline, making that part of the consultation essentially obsolete. For example, as the Conclusion notes for SR Fall Chinook,

the construction of the hydro system has severely degraded the habitat in the migratory corridor of this ESU, resulting in high levels of mortality for juvenile fish migrating towards the ocean. In general, habitat-related biological requirements of juveniles are not being fully met in the action area. The significant baseline effects of FCRPS and USBR dams and water management along with mainstem harvest rates (up to 8% non-treaty and 23% treaty Indian fisheries) are key factors influencing ESU status in the action area.

Draft BiOp at 8-8. These and other effects are not adequately considered in the conclusion.

IX. INCIDENTAL TAKE STATEMENT

The allowable take NOAA identifies in the Incidental Take Statement parallels the gap analysis. NOAA considers the allowable take to be merely the level of mortality identified in the gap analysis (see Tables 10.1 and 10.2.) NOAA does include in a second set of tables what that reflect the addition of the effects of the existence of FCRPS (Tables 10.3 and 10.4.) As with the gap analysis, the differences are dramatic. For example, For Snake River spring/summer Chinook, the allowable take (gap) is 1% versus 49% in the second set of tables (a combination of juvenile and adult mortality.) For Snake River fall Chinook the comparable numbers are 3% versus 89%. For Upper Columbia Spring Chinook, the comparable numbers are 5% versus 42%.

The difference between the “take” noted for the UPA and the UPA plus existence only highlight the extent of the mortality that is forgiven under the new jeopardy framework and standard. As was noted previously, where the 2000 BiOp sought to make up some of this mortality through additional mitigation actions and a goal of recovery, the 2004 BiOp steps aside and allows that additional mortality to continue unhindered.

Worse yet, even the second set of tables ignores delayed mortality. Intensively reviewed research indicates that the direct and delayed hydro system mortality of Snake River

spring/summer Chinook may be, on average, approximately 80%, a level that cannot be sustained by the stock. Yet there is no mention of anything but direct mortality in the allowable take statement. Thus the allowable take is given as 1%, is presented in the second set of tables as 49% and should actually be 80%.

Moreover, while we have been told that the take identified in Table 10.1 is based on modeling and unmeasurable, and that the measurable take therefore appears in Table 10.3, the incidental take statement is not written in terms of not allowing to exceed the take in Table 10.3. The language used only indicates that “NOAA Fisheries will *suspect* that the authorized take in Table 10.1 is also exceeded” if the mortality in Table 10.3 is exceeded. Thus, NOAA provides not firm restrictions and allows for additional determination in the future.

Terms and Conditions/ Monitoring

Although the Tribes appreciate those areas where relatively detailed information outlining monitoring intent exists (10.5.1.1.4 for example), many components of the overall monitoring picture remains more to the imagination rather than explicitly stated (10.5.1.1.2; 10.5.1.1.3; 10.5.1.1.5; 10.5.1.2.1 for example). The Tribes recommend that NOAA and the Action Agencies provide a complete and thorough Monitoring and Evaluation Plan in the Final BiOp so that it is clearly stated to all stakeholders just how monitoring and evaluation will proceed. Included in the Plan would be a detailed annual schedule, where applicable for the expected life of this Opinion. For actions that are expected to occur, but specifics cannot be identified, monitoring and evaluation protocol should be provided for review.

The Tribes note that there is no discussion of monitoring in Section 10 for off-site tributary habitat. We do recognize a brief, and generally vague and inadequate discussion in Section 6. For example, we note that in the Upper Columbia spring Chinook and Upper Columbia steelhead (6.5.2.2 and 6.9.2.2) the Action Agencies are only committing to effectiveness monitoring in the Methow subbasin and the Agencies expect this program to inform them about the survival effects of habitat improvement projects for the ESU. This statement is not only completely undefined in its commitment, but such a narrow approach will be scientifically indefensible in its extrapolation and application to determining mitigation benefits. The Tribes strongly advocate that in the Final BiOp, NOAA and the Action Agencies clearly articulate what types of monitoring tools will be applied for each of the mitigation actions within each of the affected subbasins, and adequately discuss how these tools will contribute to making a determination of project effectiveness. Without these basic points well established within the BiOp, the Tribes have no assurance that any reasonable monitoring and evaluation protocol will actually take place.

X. APPENDICES

In addition to the comments made above, we have the following specific comments on section in the appendices:

Appendix C -- Harvest Rates

General Comment. The document needs to clarify that it can make no projection of future allocation between treaty and non-treaty fisheries because future agreements may be different from past allocation. Therefore there should only be a discussion of overall harvest impacts. Various references to the 2001 Interim Management Agreement should be corrected to specify that it is the 2001-2003 Interim Management Agreement. While the overall harvest rate impacts in this agreement are in place through 2005, the allocation framework has expired.

Page C-1. Section C.1 SR Spring Summer Chinook

Remove reference in second paragraph concerning allocation between treaty and non-treaty fisheries.

Page C-1. Section C.2 Snake River Fall Chinook.

Paragraph two should state that the harvest rate limit is 31.29% not 31%. The statement, "There have been no additional terminal area fisheries directed at or significantly affecting SR fall Chinook" should be modified to include ", but the Snake River, lower Clearwater River, and Lower Grande Ronde River sport steelhead fisheries in the fall have a minor handling mortality on released fall Chinook."

Page C-3. Section C.5 Lower Columbia River Chinook

The bullet statements should add a statement clarifying that the U.S. v. Oregon TAC does not estimate harvest rate impacts to Coweeman River Chinook or other lower river tule stock fish or Lewis River fall Chinook in season. While lower river fisheries may be restricted if escapement goals are not expected to be met, fisheries are not managed in season for specific harvest rates on these fish.

Page C-3. Section C.6 SR Steelhead

The second paragraph in this section should be removed because it is not true. Actual total river mouth harvest rates on A or B-run steelhead are not estimated nor can they be. Even total harvest rates based on Bonneville Dam run sizes are not possible. Only the fall season treaty portion of the Bonneville Dam harvest rates are calculated. Summer season harvest impacts are not separated into A-run and B-run. Non-treaty sport steelhead harvest is all managed for the release of non-adipose fin clipped fish, and these fish are not measured. It is therefore not possible to separate any release mortality estimates into A-run and B-run. Fall season non-treaty commercial fisheries are not monitored for steelhead release, so no estimates of mortality are available. The document should also clarify that estimates of A-run and B-run steelhead at Bonneville are only an index designed to represent Snake River B-run. This index is based on size, but some B-run sized fish are known to exist in other basins.

Page C-4. Section C.6 continued.

The statement that, "... all of the impact on SR B-run (is) in fall season fisheries." is not correct. PIT tag data shows that some B-run fish pass Bonneville Dam in the summer season and therefore some level of summer season harvest certainly occurs.

The document should also mention that significant steelhead harvest also occurs in the Snake Basin.

Page C-4. Section C.7 UCR Steelhead

The statement of expected harvest rates on UCR steelhead should be removed. There are no ESU specific actual harvest rates calculated for steelhead. The same issues for calculating A-run harvest rates apply here as was mentioned for SR steelhead.

Page C-4. Section C.8 MCR Steelhead.

The harvest rates on summer steelhead should be deleted as they are not correct. There are no ESU specific actual harvest rates calculated for steelhead.

Page C-4 and C-5. Sections C.9 and C.10 UWR Steelhead and LCR Steelhead

Harvest rate estimates for these ESU's have a great deal of uncertainty.

Page C-5. Section C-12 SR Sockeye

The second sentence should be corrected to state that harvest rates have been restricted to 6-8% depending on the total sockeye run size

Appendix F. Artificial Production Section

General Comments: Appendix F is not complete. It deals with only eight ESU's. It does not deal with Lower Columbia Coho which are proposed for listing (upstream boundary of ESU is above Bonneville) and Lower Columbia Chinook (upstream boundary also above Bonneville).

Page F-3. Section 4. "Following are tables that summarize the *potential* for artificial production to reduce the risk factors for each of eight ESU's". This statement does not say that any of the possible actions will be implemented. Nor does it identify funding. It appears that the statement might be interpreted as meaning, "If these actions happen to be implemented then there may be some benefit of risk reduction." There is no apparent requirement that any of these actions be taken. Additionally, the tables include some actions which are actually ongoing. Ongoing actions should be part of the baseline. There is no discussion of how changes relative to the baseline will benefit fish and how these benefits were calculated or analyzed. The main problem with this appendix is lack of certainty.

Page F-4. Table F.1. Snake Fall Chinook. The actions described in the "Potential for Artificial Production..." Section is in part inaccurate and in part conflicts with U.S. v. Oregon Agreements for management of this program.

1. The first paragraph states "shift production from existing programs to expand fall Chinook distribution in Clearwater and Grande Ronde watersheds." This is an incorrect characterization. The U.S. v. Oregon parties have been and are

expanding the distribution of Snake River fall Chinook through expanding production as broodstock are available through a system of prioritized programs. Production will also be increased as funding and facilities through Idaho Power Company mitigation becomes available. This is not a shift in production. These actions are already occurring. There is also a statement that part of the mainstem be managed for natural production only. This is not possible. This statement should be removed. The U.S. v. Oregon parties have an ongoing protocol to incorporate natural origin fish into the broodstock. This is being done given the constraints of the trap at Lower Granite Dam.

2. The second paragraph indicates an objective of reducing stray rates of out of basin stocks. This has been done. Stray rates have been reduced through changes in programs at Umatilla and Klickitat Hatcheries. Stray fall Chinook currently comprise less than 5% of the return to the Snake River. Further reductions would be very costly and have very limited benefit.

Page F-5. Table F-2. Snake River Steelhead ESU.

There is a general recommendation to initiate a kelt reconditioning program. There is no mention of cost of funding mechanism for such a program. While there has been research that points to some benefit to kelt reconditioning under some circumstances, there is no discussion of the magnitude of any expected benefits given expected hydrosystem operation. The tribes have made numerous proposals in the U.S. v. Oregon forum to develop and transition to local steelhead broodstocks. Even so, there appears to be a great deal of uncertainty regarding actually developing these local broodstocks as this document suggests. The other proposals are not significantly different from status quo.

Comments to specific sections follow:

1. Tucannon River. Part of the current production uses natural origin broodstock. The tribes have made a proposal within the U.S. v. Oregon forum to transition this program to entirely local origin broodstock. Further segregation of current hatchery stock from natural origin fish is likely possible only through construction of new trap(s) and/or weirs. If this is the intent, there is no mention of expected costs or proposed funding method. This does not appear to be a significant change from status quo.
2. Clearwater River – lower mainstem. There is a statement indicating that a new program might be initiated on the Nez Perce Reservation. This proposed program is not described so there is no way to comment on it or analyze its effect. There is also a statement that some sort of “reproduction study” would be initiated and that initiating a study would increase the number of naturally spawning fish. There is no description provided of how it is possible that simply initiating a study would increase the number of naturally spawning fish. It seems unlikely.
3. South Fork Clearwater. Currently there is a supplementation program releasing approximately 483,000 B-run steelhead annually. While it may be desirable to increase the number of natural origin fish in the broodstock, there is nothing provided that would demonstrate that doing so would increase the number of

- naturally spawning fish above current levels as the document suggests. This section does not appear to be significantly different from status quo.
4. Lolo Creek. Currently there is a supplementation program releasing 50,000 B-run smolts annually. There is nothing provided to suggest that the current stock is not sufficiently “local”. Even if a more “local” broodstock were developed, there is nothing provided that suggests how this would provide an increased number of naturally spawning fish over current levels as the document suggests. This section does not appear to be significantly different from status quo.
 5. Selway River. There is no agreement among the U.S. v. Oregon parties that the Selway River should necessarily be reserved for natural production only.
 6. Lochsa River. There is no agreement among the U.S. v. Oregon parties that the Lochsa River should be reserved for natural production only. The tribes have made a proposal in the U.S. v. Oregon forum that a supplementation program be developed in the Lochsa.
 7. Grande Ronde River – lower mainstem. Instead of trying to pursue further isolation of the hatchery and natural origin fish, which would probably have no additional benefit to natural spawners, it would be better to consider switching Cottonwood acclimation pond to a fall Chinook facility.
 8. Wallowa River – Developing a local broodstock supplementation study in a tributary such as deer creek is not necessary and would have no benefit to naturally spawning fish. The tribes proposed developing a local broodstock supplementation program (not just a study) at Wallowa Acclimation Pond. This proposal would reduce the release of out of basin stocks. This proposal would benefit naturally spawning fish.
 9. Grande Ronde upper mainstem tributaries. The document claims there is no potential benefit from artificial production. This is not true. The tribes have already made a proposal to develop a local broodstock supplementation program.
 10. Little Salmon River and Rapid River. While the document indicates that the Little Salmon is managed only for fisheries and apparently has no objective for natural origin fish, the tribes have made a proposal to develop a local broodstock for releases in the Little Salmon River and Hazard Creek. This would reduce the number of out of ESU hatchery fish released in the basin.
 11. South Fork Salmon River. There is no agreement in the U.S. v. Oregon forum that this subbasin be reserved only for natural production. The tribes have proposed developing a local B-run broodstock supplementation program.
 12. Lemhi River. The tribes have already proposed transitioning this program to a local A-run stock.
 13. Pahsimeroi River. The tribes have already proposed transitioning to a local broodstock.
 14. East Fork Salmon River. The tribes have made a proposal to transition to a local A-run broodstock. The tribes have proposed discontinuing releases of Clearwater B-run stock in the Salmon River basin.
 15. Salmon River- upper mainstem. The tribes have proposed transitioning to a local A-run broodstock.
 16. Imnaha River. There is ongoing monitoring of the existing supplementation program for Big Sheep Creek. This is not a significant change from status quo.

17. Hells Canyon and tributaries. The tribes have proposed to eliminate the current hatchery stock released below Hells Canyon dam. This would have a more substantial effect than simply trying to “further segregate the hatchery stock.

Page F-10, Table F.3. Snake River Sockeye.

The document proposes releasing approximately 200,000 yearling smolts. Currently there is no smolt production. In past years when there has been smolt releases, they have generally been very small (<50,000). These releases have been totally inadequate to generate returns to the Stanley Basin which in only one year has been greater than 100 adults. There is no indication that a program of only 200,000 yearling smolts would produce adult returns that would lead to rebuilding. If the objective is to actually use hatchery production to benefit Snake River sockeye, then a much larger program would be needed.

Page F-11, Table F.4. Snake River Spring/Summer Chinook.

Comments to sections of the table follow:

1. Tucannon River. It is not clear if the document means that production of supplementation fish would increase. This should be clarified.
2. Lostine River. Proposed improvements to existing supplementation program are not identified and there for can not be commented on or analyzed. There is no way to determine if there would be a benefit to natural spawning fish.
3. Catherine Creek. Proposed improvements to existing supplementation program are not identified and there for can not be commented on or analyzed. There is no way to determine if there would be a benefit to natural spawning fish.
4. Grande Ronde – upper mainstem. Proposed improvements to existing supplementation program are not identified and there for can not be commented on or analyzed. There is no way to determine if there would be a benefit to natural spawning fish.
5. Imnaha River. Proposed improvements to existing supplementation program are not identified and there for can not be commented on or analyzed. There is no way to determine if there would be a benefit to natural spawning fish.
6. South Fork Salmon River. This is a vague statement. There is no indication as to what exactly would be done and what change from status quo might be expected.
7. East Fork South Fork. The tribes have proposed increasing the Johnson Creek supplementation program prior to five years.
8. Middle Fork Salmon and tributaries. There is no scientific consensus on the population structure of the Middle Fork Salmon river.
9. Lemhi River. The tribes have proposed a supplementation program for the Lemhi.
10. Pahsimeroi River. There is an ongoing hatchery program. The tribes have proposed incorporating natural origin fish in the broodstock.
11. East Fork Salmon River. The tribes have proposed a supplementation program for this river.
12. Yankee Fork. The tribes have proposed a supplementation program for this river.
13. Valley Creek. The tribes have proposed a supplementation program.

CONCLUSION

NOAA's approach toward jeopardy analysis presented early in 2004 represents a dramatic departure from those of earlier Biological Opinions. Most notable is a change in the goal of the analysis. Previous BiOPs were aimed at assessing the effects of different management actions in reaching mutually developed minimum levels for survival and recovery. In stocks where such goals had not been established, the goal was to stabilize the stock. In the 2004 BiOP, none of these goals were used. Instead, the goal has become to not make survival any worse. In other words, a stock may be in decline as long as the proposed action does not hasten the decline.

This goal is a theme that pervades the 2004 BiOP. The environmental baseline nearly all the factors that were responsible for the declines of the listed stocks and that continue to thwart rebuilding. NOAA has in effect "grandfathered" in the dams and reservoirs as though they are part of the natural landscape.

NOAA has also taken a narrow view on what it considers their discretionary authority. They have deemed irrigation withdrawals to be largely beyond their discretionary authority. Although they acknowledge some flexibility with flood control, spill caps designed to prevent Gas Bubble Disease impose limitations on flood control manipulations.

The resulting jeopardy analysis has thus been hobbled by a combination of the new goal (don't make things worse), the environmental baseline and what NOAA's change in policy for survival and recovery under 7(a)(2). The analysis estimates the difference (or gap) between an optimum (or reference) operation and the "proposed action" (they way the action agencies intend to operate the system). The gaps are unrealistically narrow for the simple reason that with all the constraints, the reference operation and the proposed action are close together, in some cases nearly identical. None of the major methods for increasing survival (breaching or substantial increases in flow or spill) that were used in the past are considered.

Paradoxically, NOAA purports to consider VSP (Viable Salmonid Population) concepts in the BiOP. It seems clear that accepting continuing declines is at odds with VSP concepts. Genetic and demographic concepts, such as the "extinction vortex", previously thought to be important, have also been ignored.

Appreciable gaps between the reference and proposed operation of the FCRPS are to be filled through offsite mitigation. But the methodology for connecting the offsite measures is qualitative and nebulous at best. There is no connection between management measures and recovery because the entire concept of recovery has been eliminated. Even if it can be assumed that the UPA will eventually lead to recovery, the actions are too vague to be of use. There are still outstanding questions regarding the action areas and how further degradation of the habitat will be balanced with proposed improvements. The

temporal considerations, a concern with many habitat measures, are absent. Finally, financial considerations have not been addressed.

NOAA's incidental take parallels the gap analysis. NOAA considers the allowable take to be merely the level of mortality identified in the gap analysis (see Tables 10.1 and 10.2.) NOAA does include in a second set of tables what one might consider the actual allowable takes (Tables 10.3 and 10.4.) For Snake River spring/summer chinook, the allowable take (gap) is 1% versus 56% in the second set of tables (a combination of juvenile and adult mortality.) But even the second set of tables ignores delayed mortality. Intensively reviewed research indicates that the direct and delayed hydro system mortality of Snake River spring/summer chinook may be, on average, approximately 80%, a level that cannot be sustained by the stock. Yet there is no mention of anything but direct mortality in the allowable take statement. Thus the presumed allowable take is given as 1%, is presented in the second set of tables as 49% and should actually be 80%. NOAA is in essence forgiving approximately 98% of the mortality attributable to the FCRPS

The end result is that, under the UPA, the status quo is maintained. For listed Snake River stocks this means a continued reliance on the transportation program despite its demonstrable inability to halt declines let alone restore runs.

Sincerely,

Olney Patt, Jr.
Executive Director

REFERENCES:

- Allendorf, F.W., and nine co-authors. 1997. Prioritizing Pacific salmon stocks for conservation. *Conserv. Biol.* 11:140-152.
- Backman, T.W.H. and A.F. Evans. 2002. Gas bubble trauma incidence in adult salmonids in the Columbia River Basin. *North American Journal of Fisheries Management.* 22:579-584.
- Backman, T.W.H., A.F. Evans, and M.S. Robertson. 2002. Symptoms of gas bubble trauma induced in salmon (*Onchorhynchus spp.*) by total dissolved gas supersaturation of the Snake and Columbia Rivers, USA. *North American Journal of Fisheries Management.* 2:965-972.
- Backman, T.W.H., A.F. Evans, and M.S. Robertson. 2000. Symptoms of gas bubble trauma induced in salmon (*Onchorhynchus spp.*) by total dissolved gas supersaturation of the Snake and Columbia Rivers, USA. Draft Report. Project No. 93-008-02. Contract No. 95BI39861 to the Bonneville Power Administration. By Columbia River Inter-Tribal Fish Commission. Portland, Oregon.
- Backman, T.W.H., A.F. Evans, and M.S. Robertson. 2000. Symptoms of gas bubble trauma induced in salmon (*Onchorhynchus spp.*) by total dissolved gas supersaturation of the Snake and Columbia Rivers, USA. Draft Report. Project No. 93-008-02. Contract No. 95BI39861 to the Bonneville Power Administration. By Columbia River Inter-Tribal Fish Commission. Portland, Oregon.
- Beamish, R.J. and D.R. Bouillon. 1993. Pacific salmon production trends in relation to climate. *Can.J. Fish.Aqua. Sci.* 50:1002-1016.
- Bjornn, T. and M.L. Keefer. 1999. Evaluation of adult salmon and steelhead migrations past dams and through resevoirs in the Columbia River Basin. Data and analyses presented to the 1995 Corps of Engineers Annual Research Review. Walla Walla Washington. By University of Idaho Cooperative Fishery Unit. Moscow, Idaho.
- Bouwes, N., and five co-authors. 2002. Comparative survival study of PIT-Tagged Spring/Summer chinook. Status report for migration years 1997-2000 Mark Recapture Activities. Columbia Basin Fishery Agencies and Tribes. Fish Passage Center. Portland, Oregon.
- Buchanan and Moring. 1986. Management problems with recycling adult summer steelhead at Foster Reservoir, Oregon. To Corps of Engineers. By Fish Commission of Oregon Management and Research Division. Portland, Oregon

Budy, P, G.P. Thiede, N. Bouwes, C.E. Petrosky and H. Schaller. 2002. Evidence linking delayed mortality of Snake River salmon to their earlier hydrosystem experience. *North American Journal of Fisheries Management*. 22:35-51.

Congleton, J.L., T. Wagner, J.Evavold, J. Hafner, D.Fryer and B.Sun. 2002. Evaluation of physiological differences in transported, inriver migrating and multiple bypassed juvenile salmon, Annual Report 2002. Report DACW68-00-C-0031 to Walla Walla District, Corps of Engineers. By Idaho Cooperative Fish and Wildlife Research Unit. Moscow, Idaho.

Columbia River Inter-Tribal Fish Commission (1996a). *Wy-Kan-Ush-Mi Wa-Kish-Wit: Spirit of the Salmon. Vol. I*. Portland, Oregon.

Columbia River Inter-Tribal Fish Commission (1996b). *Wy-Kan-Ush-Mi Wa-Kish-Wit: Spirit of the Salmon. Vol. II: Subbasin Plans*. Portland, Oregon.

Connor et al., "Juvenile Life History of Wild Fall Chinook Salmon in the Snake and Clearwater Rivers." August 2002, *North American Journal of Fisheries Management*. Vol. 22, Number 3.

CRITFC 2000. Comments to the NMFS 1999 draft White Paper, *Passage of Juvenile and Adult Salmonids Past Columbia and Snake River Dams*. Portland, Oregon.

DeHart, M. 1999. October 28, 1999 Memorandum to J. Palensky, NMFS. Comments on NMFS White Papers on Salmonid Travel Time and Survival Related to Flow Management in the Columbia River Basin. Fish Passage Center. Portland, Oregon.

Deriso, R B., D. Marmorek and I. Parnell. 2001. Retrospective patterns of differential mortality and common year-effects experienced by spring and summer chinook salmon (*Oncorhynchus tshawytscha*) of the Columbia River. *Can. J. Fish. Aquat. Sci.* 58:2919-2430.

Deriso, R.B., D.R.Marmorek and I.J. Parnell. 1996. Retrospective Analysis of Passage Mortality of Spring Chinook of the Columbia River. Chapter 56 in Marmorek et al. 1996. Plan for Analyzing and Testing Hypotheses (PATH): Final report on retrospective analyses for fiscal year 1996. Compiled and edited by ESSA Technologies, Ltd. Vancouver, B.C.

English, K.E., C.Sliwinski, B. Nash and J.R. Stevenson. 2001. Assessment of adult steelhead migration through the Mid-Columbia River using radio-telemetry techniques, 1999-2000. LGL Limited. Sidney, British Columbia.

Evans, A. and R. Beaty. 2000. Identification and enumeration of steelhead (*Oncorhynchus mykiss*) kelts at Little Goose Dam juvenile bypass separator, 1999. Contract No. DACW68-99-M-3120 to Walla Walla District, Corps of Engineers. By Columbia River Inter-Tribal Fish Commission. Portland, Oregon.

Gilbreath, L.G., E.M. Dawley, R.D. Ledgerwood, P.J. Bentley and S.J. Grabowski. 1993. Relative survival of subyearling chinook salmon that have passed Bonneville Dam via the spillway or second powerhouse turbines or bypass system: Adult recoveries through 1991. Coastal Zone and Estuarine Services Division. NMFS. Seattle, Washington.

Heede, B.H. and J.N. Rinne. 1990. Hydrodynamic and fluvial morphologic processes: implications for fisheries management and research. North American Journal of Fisheries Management. 10:249-268.

ISAB (Independent Scientific Advisory Board). 2003. Review of flow augmentation: update and clarification. Report 2003-1 to the Northwest Power Planning Council. Portland, Oregon.

ISAB (Independent Scientific Advisory Board). 2001. ISAB consultation recommendations on Council Staff's Draft Issue Paper: *Analysis of 2001 Federal Columbia River Power System Operations on Fish Survival*. Document ISAB 2001-4. Northwest Power Planning Council. Portland, Oregon.

ISAB (Independent Scientific Advisory Board). 1998. Review of the Corps of Engineers Capital Construction Program. Report 98-8. Dissolved Gas Abatement Program. Northwest Power Planning Council. Portland, Oregon.

ISG (Independent Science Group). 1996. *Return to the River*. Restoration of Salmonid Fish in the Columbia River Ecosystem. Northwest Power Planning Council. Portland, Oregon.

Kosteki, P.T., P. Clifford, S.P. Gloss and J.C. Carlisle. 1987. Scale loss and survival in smolts of Atlantic salmon (*Salmo salar*) after turbine passage. Can.J. Fish. Aquat. Sci. 44:210-214.

Junge, C.O. and A.L. Oakley. 1967. Trends in production rates for upper Columbia River runs of salmon and steelhead and possible effects of changes in turbidity. Research Brief of the Oregon Fish Commission. Vol 12. No. 1. Portland, Oregon.

Lichatowich, J.A. and S. Cramer. 1979. Parameter selection and sample sizes in studies of anadromous salmonids. Information Report Series, Fisheries. Number 80-1. Oregon Department of Fish and Wildlife. Portland, Oregon.

Liscom and Stuehrenburg, L. 1985. Radio tracking studies of adult chinook salmon and steelhead to determine the effect of "zero" river flow during water storage at Little Goose Dam on the Snake River. National Marine Fisheries Service. Seattle, Washington.

Marmorek, D.R., M. Porter, I.J. Parnell and C. Peters, eds. 2004. Comparative survival study workshop, February 11 – 13, 2004; Bonneville Hot Springs Resort. ESSA Tech. Ltd., Vancouver B.C.

McAllister, M.K. and R.M. Peterman. 1992. Experimental design in the management of fisheries: a review. North American Journal of Fisheries Management. 12:1-18.

Nickelson, T.E. and P.W. Lawson. 1998. Population of coho salmon, *Oncorhynchus kisutch*, in Oregon coastal basins: application of a habitat-based life cycle model. *Can J. Fish. Aquat. Sci.* 55:2383-2392.

NMFS (National Marine Fisheries Service). 2000. Endangered Species Act. Section 7. Draft 2000 Biological Opinion for the Federal Columbia River Power System Including the Juvenile Fish Transportation Program and the Bureau of Reclamation's 31 Projects Including the Entire Columbia Basin Project. Appendix E. Risk Assessment for the Spill Program Described in the 2000 Draft Biological Opinion. Northwest Region. Seattle, Washington.

Orsborn, J.F. 1987. Fishways-historical perspective of design practices. *American Fisheries Society Symposium*. 1:122-130.

Pearcy, W.G. 1997. Salmon production in changing ocean domains. *In Pacific salmon and their ecosystem: status and future options*. Edited by D.J. Stouder, P.A. Bisson and R.J. Naiman. Chapman and Hall, New York. Pp. 331-352.

Peterman, R.M and J.L. Anderson. 1999. Decision analysis: a method for taking uncertainties into account in risk-based decision making. *Human and Ecological Risk Assessment*. 5:231-244.

Peterman, R.M. and B.L. Antcliffe. 1993. A framework for designing aquatic monitoring programs. Pages 227-251 *in* A.P. Farrell, editor. *The aquatic resource research project: toward environmental risk assessment and management of the Fraser River basin*. Technical Report for the British Columbia Ministry of Environment. Centre for Excellence in Environmental Research. Simon Fraser University, Burnaby, B.C.

Petrosky, C.E., H.A. Schaller and P. Budy. 2001. Productivity and survival rate trends in the freshwater spawning and rearing stage of Snake River chinook salmon (*Oncorhynchus tshawytscha*). *Can J. fish. Aquat. Sci.* 58:1197-1207.

Petrosky, C.E. and H. Schaller. 1998. Smolt-to-adult return rate estimates of Snake River aggregate wild spring and summer chinook. Submission 10 *in* Marmorek et al. 1996. *Plan for Analyzing and Testing Hypotheses (PATH): Final report on retrospective analyses for fiscal year 1996*. Compiled and edited by ESSA Technologies, Ltd. Vancouver, B.C.

Rhodes, J.J., D.A. McCullough, and F.A. Espinosa, Jr. 1994. A coarse screening process for evaluation of the effects of land management activities on salmon spawning and rearing habitat in ESA consultations. Tech. Report 94-4. Columbia River Inter-Tribal Fish Commission, Portland, Oregon. 127 pp. + appendices. (available at www.critfc.org)

Schaller, H.E., C.E. Petrosky and O.P. Langness. 1999. Contrasting pattern of productivity and survival rate for stream-type chinook salmon (*Oncorhynchus tshawytscha*) populations of the Snake and Columbia Rivers. *Can.J. Fish and Aquat. Sci.* 56:1031-1045.

Strong, T. 1998. February 12, 1998 CRITFC Comments on USFWS application to Oregon Department of Environmental Quality for a temporary total dissolved gas waiver for Spring Creek tule migrants. Columbia River Inter-Tribal Fish Commission. Portland, Oregon.

Wagner, P. and T. Hillson. 1991. Evaluation of adult fallback through the McNary Dam juvenile bypass system. Contract DACW68-82-C-0077. To Walla Walla District, Corps of Engineers. By Washington Department of Fisheries. Olympia, Washington.

Wagner, E. and P. Ingram. 1973. Evaluation of fish facilities and passage at Foster and Green Peter Dams on the South Santiam River drainage in Oregon. Contract No. DACW57-68-C-0013. To Corps of Engineers. By Fish Commission of Oregon Management and Research Division. Portland, Oregon.

WDFW (Washington Department of Fish and Wildlife and Oregon Department of Fish and Wildlife). 1999-2000. Weekly Monitoring Reports at Corps of Engineers dam facilities. Olympia, Washington and Portland, Oregon.

Wilson, P.H. 2003. Using population projection matrices to evaluate recovery strategies for Snake River spring and summer chinook salmon. *Conservation Biology* 17:782-794.

Yuen, H. and R.Sharma. 2004 (in review). Using simulation techniques to estimate management parameters on Snake River steelhead: declines in productivity make rebuilding difficult. U.S. Fish and Wildlife Service and Columbia River Inter-Tribal Fish Commission. Vancouver Washington and Portland, Oregon.

APPENDICES AND ATTACHMENTS TO THESE COMMENTS:

Appendices:

A – 10/8/04 Comments of the CRITFC Regarding NOAA Fisheries’ Sept. 8, 2004 Draft BiOp for Operation of the FCRPS

B – Framework Analysis

C –Comments on Ocean Conditions and Flows, Kyle Martin 9/27/04

D –Review of “Evaluating the Potential for Improvements to Habitat Condition to Improve Population Status for Eight Salmon and Steelhead ESUs in the Columbia Basin”, Dale McCullough 10/8/04

E –PAH Impacts to Salmon, Patti Howard

Attachments:

1 – Fish Passage Center Comments (with CSS comments attached)

2 – Fish Passage Center 4/16/04 Memo SAR Transport

3 – Joint Technical Staff 2/20/04 Cover Letter and Comments re Summer Spill Analyses

4 – Joint Technical Staff 4/9/04 Spill Comments

5 – Joint Technical Staff 6/14/04 Spill Comments

6 – Columbia Basin Fish and Wildlife Authority Columbia River Fish & Wildlife Program-Rolling Provincial Review Implementation 2001-2003

7 – Columbia Basin Fish and Wildlife Authority 3/26/04 Letter to Northwest Power and Conservation Council

8 – University of Idaho/Idaho Cooperative Fish & Wildlife Research Unit Report

9 – Phaedra Budy, Gary Thiede, et al. Report

10 – PATH Final Report FY 1998

11 – CRFM Budget Spreadsheet through 2010

- 12 – 12/15/00 Analysis of All-H Actions
- 13 – 7/21/98 Department of Commerce Letter
- 14 – PATH Weight of Evidence Report
- 15 – 7/1/04 Findings Report on Action Agencies 2004/2004-2008 Implementation Plan
- 16 – Henry Yuen, Rishi Sharma Report
- 17 – Deriso, Marmorek, Parnell-Spring/Summer Chinook Differential Mortality
- 18 – Schaller et al., Productivity and Survival Rates
- 19 – 2/16/00 Comments on Tower Fire Recovery Projects Draft EIS