



## COLUMBIA RIVER INTER-TRIBAL FISH COMMISSION

729 NE Oregon, Suite 200, Portland, Oregon 97232

Telephone 503 238 0667

Fax 503 235 4228

June 14, 2004

Brigadier General William Grisoli  
Division Engineer  
Northwestern Division  
Corps of Engineers  
P.O. Box 2870  
Portland, Oregon 97208

Steven Wright  
Regional Administrator  
Bonneville Power Administration  
P.O. Box 3621, R-A  
Portland, Oregon 97208

Dear Brigadier General Grisoli and Mr. Wright:

The Columbia River Inter-Tribal Fish Commission (CRITFC) <sup>1</sup> was created by the Confederated Tribes of the Warm Springs Reservation of Oregon, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes and Bands of the Yakama Indian Nation and the Nez Perce Tribe. These four tribes possess rights reserved by treaties with the United States to take fish destined to pass the tribes' usual and accustomed fishing places. Among these fish are the anadromous species originating in the Columbia River and its tributaries.

CRITFC appreciates this opportunity to comment to the Corps' and BPA's June 8, 2004 Amended Proposal for Federal Columbia River Power System Summer Juvenile Bypass Spill Options (amended spill proposal). If implemented, this amended proposal would eliminate summer spill in June, July and August required under the 2000 FCRPS Biological Opinion Reasonable and Prudent Measure<sup>2</sup> for a one year period. We have reviewed this document and technical appendices and have reviewed all of the technical record surrounding this issue since BPA first proposed curtailment of summer spill in the summer of 2003. We have prepared the following general and specific comments on these documents.

---

<sup>1</sup> The CRITFC was formed in 1977 per formal resolution of the four tribes' governing bodies. The Commission is comprised of elected and appointed tribal officials who are members of the respective tribal fish and wildlife committees. The Commission has technical and legal resources that provide assistance to the tribes in protecting and enhancing their federally reserved trust resources.

<sup>2</sup> The 2000 FCRPS BiOp calls for spill at Ice Harbor, John Day, The Dalles and Bonneville dams throughout all of July and August. The federal spill proposal calls for curtailing Ice Harbor and John Day spill on August 21, and curtailing all spill at The Dalles and Bonneville dams during all of the month of August. In contrast, the 2004 CRITFC River operations plan calls for spill at all eight Corps dams in the Snake and Lower Columbia Rivers from July 1- September 15.

Please consider our comments as preliminary. After months of discussions about several different proposals to curtail summer spill, similar to the timeline allowed by the Corps and BPA on the original proposal, your agencies have allowed the region only four working days to respond to a specific amended proposal to curtail summer spill with offsets. The region submitted detailed comments in February 2004 and April 2004 on the suite of federal spill proposals presented at that time. The Corps and BPA provided a response to these comments with the June 8, 2004 amended proposal. It is unreasonable to expect CRITFC and its member tribes to present a final response to the amended spill proposal in only four working days, thus we will provide additional comments within a reasonable amount of time.

## ***General Comments***

As stated in our April 7, 2004 comments on the preliminary summer spill curtailment proposal, we believe that the amended proposal would impact both naturally spawning and hatchery salmon, sturgeon and Pacific lamprey. While some disparage the value of hatchery-reared salmon, there is no “bright line” between the value of these salmon and naturally produced salmon. In terms of the federal government’s obligations to the CRITFC tribes’ treaties, there is no difference between a hatchery salmon and a naturally produced salmon. This principle has been upheld in federal courts and in the *United States v. Oregon* proceedings. The right of tribes to fish must not be subordinated to other economic interests such as competing fisheries, irrigation storage, or power demands.

As we stated in our April 7, 2004 comment letter to the Corps and BPA, every additional adult salmon available for tribal harvest is critical from a tribal cultural and use perspective. Tribal members are dependent on these salmon for ceremonial and subsistence uses. These salmon comprise a critical portion of sustenance for tribal members. Also, salmon and Pacific lamprey are the mainstay of tribal religious and cultural practices. Every juvenile salmon and lamprey that survives hydrosystem passage through spill has the potential to bring back some of the river’s wealth to the tribal economy and culture.

While CRITFC and its member tribes appreciate the invitation to consult with the Corps and BPA for a two hour session on June 14, 2004, there has been a noticeable breakdown in tribal and federal agency consultation on the summer spill proposal. The tribes need a time frame when a decision is due, and then backtrack to allow for several technical and policy meetings to discuss a management proposal that has the potential to impact tribal trust and treaty resources, before the action is implemented. The Corps and BPA’s written tribal consultation policies clearly state this process as key to understanding the principle of sovereignty and the trust relationship between the federal agencies and the tribes. Affording the tribes a few days notice to respond to complex technical and policy proposals with potentially serious consequences to trust resources violates the spirit and intent of consultation. The Corps and BPA have a legal obligation to protect tribal treaty and trust resources.

Reduction or curtailment of summer spill is inconsistent with the federal agencies’ “aggressive, non-breach” option that is currently being implemented and has been upheld as a place holder by the federal district court as a new biological opinion is being crafted to remedy deficiencies under the existing opinion. The tribes will seek a status conference with the federal

district court to discuss the amended spill proposal and its inconsistencies with the court's decision to maintain the provision of the 2000 FCRPS Biological Opinion until a new Biological Opinion is issued.

Further, the 2003 Fall Management Agreement under *US v. Oregon* calls for the release of Lyons Ferry hatchery fish as subyearlings, which is the natural, migratory life history of these fish. The amended proposal's offset to hold 200,000 of these subyearlings and release them as yearlings violates this agreement, which has been adopted by court order. The offset would also adversely affect management under the Pacific Salmon Treaty, where these fish have been identified as indicator stock and studies would be affected by their delayed release. The tribes are very concerned that BPA has already completed a contract with WDFW before the Record of Decision is signed on the amended spill proposal. The tribes have filed a motion with the federal district court challenging this proposed offset as contrary to the 2003 Fall Management Agreement.

The Corps and BPA are proposing to eliminate summer spill without full regional support and contrary to specific requirements of the 2000 FCRPS Biological Opinion. Further, the Corps and BPA have failed to conduct a formal environmental review (NEPA) for the significant federal action of curtailing summer spill that is being proposed.

The Corps and Bonneville propose to implement reduction of summer spill at Bonneville Dam on June 20, 2004, 1) without any environmental analysis, 2) before NOAA Fisheries completes its findings for summer spill and, 3) before the Corps signs a record of decision for the summer spill proposal. The joint technical staffs of the fishery managers oppose this study reducing spill on technical grounds (Attachment 1). CRITFC considers this study part of the overall summer spill proposal. The Corps should not proceed with the study until a full environmental review is conducted and until the record of decision is signed.

Reviewing the best available science, including smolt-to-adult survival rates through different passage routes, there is no biological basis for the abandonment of the BiOp spill, especially since the region has not completed evaluation of the curtailment of 2001 summer spill by the Corps and BPA in terms of life-cycle survival and productivity of listed and non-listed anadromous fish.

The federal motivation to pursue spill curtailment appears to be solely a financial concern relating to revenue foregone to BPA from providing summer spill, despite BPA's current vastly improved revenue stream, compared to that in 2001. Records indicate that BPA's 2003 income was greater than all but three or four previous years in its history. Further, BPA will make their treasury payment and will be fiscally solvent without implementation of the spill proposal. The net gain of the spill proposal (\$20-31 million) is miniscule compared to BPA's annual power revenues of around \$3 billion. BPA is financially well off compared to 2001. The BPA cash balance has increased by \$467 million to \$969 million, according to BPA's Second Quarter Report. The end of year balance, after making treasury payment, is projected to be \$492 million. Further, the end of year balance is 107% of the original BPA 2004 forecast. The revenue from summer spill curtailment would be only about 6% of BPA's year end balance.

As we have previously commented, the 2004 federal spill proposal must be placed in a historical context and considered in light of the evaluation of the 2001 summer spill curtailment impacts on anadromous fish. In 2001, BPA declared a financial emergency and the Corps curtailed 2000 FCRPS Biological Opinion summer spill, over the strong objections of CRITFC and its member tribes. In meetings with the federal executives, CRITFC and its member tribes raised the issue that the loss of the 2001 outmigrating juvenile year class would ripple through several succeeding brood years. The evaluation of the impacts of curtailing spill in 2001 is still ongoing, and it would be premature and pose a serious risk to the future of the Columbia River anadromous fish resource to curtail spill again before the full impact of the 2001 spill curtailment can be fully evaluated. Age class analyses performed by CRITFC at Bonneville Dam indicate that last years' fall chinook adult returns (three year olds that outmigrated in 2001), were substantially lower in abundance than the preceding two years.<sup>3</sup> By the end of October 2004, the data for the four year old component of the 2001 juvenile fall chinook outmigrants will be available. Because the four year old component is normally the most abundant of any fall chinook brood, it is critical that these adult returns be evaluated in respect to environmental conditions present during their life histories before embarking on a risky no-spill strategy.

We continue to have serious concern that there is no specific evaluation program in place to monitor and determine the biological impacts of the federal proposal to curtail 2004 spill. This is counter to the Northwest Power and Conservation Council's 2003 Mainstem Amendment to the Fish and Wildlife Program that calls for the federal agencies to consult with the state fish and wildlife agencies and tribes and the Independent Scientific Advisory Board, "...[i]n a rigorous evaluation of the biological effectiveness and cost of spillway passage at each project and bring that information to bear in a systematic way in decisions when and how much to spill...". For example, there are no proposals to PIT-Tag, radio-tag summer migrants or implement hydroacoustic or sonar methods to gain system-wide evaluations on the impacts of the spill curtailment proposal. A critical consideration is that an evaluation of the effectiveness and survival of summer migrants through the Lower Granite removable spillway weir is conducted this summer. Otherwise, critical time will be lost in gaining support of constructing these weirs at other dams and preparing for a vital salmon evaluation called for by the region and the 2000 FCRPS Biological Opinion that compares RSW/spill (in-river passage) and juvenile transportation. The removable spillway weir (RSW) offset included for future years in the amended proposal is not logical. It makes no sense to consider adding RSWs to additional dams until the Lower Granite RSW is tested for summer migrant passage. The Action Agencies oppose summer RSW testing because some spill is required which results in lost power revenues

As we stated in prior comments, it is important to consider that spill is regionally undisputed as the safest means of anadromous fish passage through dams as stated by the Independent Scientific Advisory Board, the 2000 FCRPS Biological Opinion and the Washington Department of Fish and Wildlife.

---

<sup>3</sup> Considerably higher than average adult fall chinook returns from 1998 and 1999 broods are likely the result of good ocean survival. Good ocean conditions occurred for the 2000 fall chinook brood that outmigrated as juveniles in 2001, but a magnitude fewer adults returned in 2003. The dramatic reduction in 2004 spring chinook adult returns over forecasted returns demonstrates the magnitude of impacts to stocks when spill is curtailed. Only about 4% of the entire 2004 spring chinook return to Bonneville Dam was comprised of juveniles that outmigrated through the hydrosystem in 2001 when spill was curtailed due to BPA's declared fiscal emergency.

Analysis by the State, Federal and Tribal Fishery Agencies Joint Technical Staff (June 13, 2003) indicates that a substantial number of listed and unlisted wild and hatchery fall chinook migrate in the Columbia and Snake Rivers beyond the August 31 end of spill in the 2000 FCRPS Biological Opinion and could substantially benefit from increasing spill duration at federal dams.

Twelve salmon stocks would be impacted by the amended spill proposal. As stated in the February 20, 2004 State, Federal and Tribal Fishery Agencies Joint Technical Staff and April 7, 2004 CRITFC comments to the Corps and BPA, Pacific lamprey and sturgeon could also be impacted by spill curtailment. Neither of these stocks are afforded any mitigation for lost spill.

CRITFC has reviewed the Corps and BPA's technical analyses regarding impacts of the amended proposal to curtail summer spill and the value of proposed offsets. Many of our prior comments regarding the initial summer spill curtailment proposal were not addressed by the Corps and BPA. We attach and incorporate by reference the June 14, 2004 State, Federal and Tribal Fishery Agencies Joint Technical Staff comments to the amended proposal (Attachment 2). As noted in prior comments, the BPA SIMPAS model analysis remains significantly flawed in several respects.

CRITFC's analysis of impacts includes both ESA listed and unlisted juvenile and adult fall chinook and steelhead. Low abundance of listed steelhead and fall chinook has and continues to restrict tribes from achieving their treaty-reserved share of unlisted fall chinook. The tribes have severely restricted their harvests of steelhead and fall chinook to allow pass-through of adults to spawning areas to rebuild these stocks. Additional harvest of these fish by the FCRPS by curtailing spill places the conservation burden squarely on the tribes.

CRITFC has analyzed the impact of the amended spill proposal on adult escapement to coastwide fisheries covered under the *U.S.-Canada Pacific Salmon Treaty* (Attachment 3). In low flow years, the losses are estimated to increase to at least 2.5% for SEAK fisheries, to 2.5% for NBC fisheries, and to 5% for Columbia River fisheries. Coastwide, this means a cultural and economic loss of about 22,500 adult salmon to the tribes' and to small coastal and in-river communities.

## ***Specific Comments***

### Impacts Assessment for ESA listed Snake River Fall Chinook

Using the Action Agencies' most recent spill curtailment proposal, the CRITFC analysis resulted in an additional 37% or 561 fish loss of Snake River fall chinook migrants above the Action Agencies' Snake River fall chinook loss estimates. CRITFC staff used SIMPASS to evaluate the June 8 proposal. This analysis used run timing numbers provided by NOAA and FPC staff and the model parameters from the previous NOAA analysis. Staff only evaluated the late and heavy hydro impact. If time permits the other categories may be reviewed.

The only parameters that were changed during the analysis compared to the NOAA parameters are:

1) Pool mortality at TDA was set at a 3% decrease instead of 2%.

Instead of using a system survival approach, CRITFC used a reach survival for the different reaches that the fish would be present at where different operations would take place. This method takes longer but allows the user to input juvenile population throughout the system. We compared the project and pool survivals from both staffs work and that provided by NOAA. There were nearly exact. We then estimated the impacts to just the ESA listed fish populations outlined in the NOAA memo.

We estimated the impact to just the ESA listed fish starting at LWG dam face to be:

	<b>Estimate</b>
<b>Action Agencies Impact</b>	<b>943</b>
<b>CRITFC Staff</b>	<b>1504</b>
<b>Difference</b>	<b>-561</b>

This represents a 37% increase in ESA fish that requires additional mitigation beyond the 100 Kaf of Brownlee water in the amended proposal.

#### Other Concerns with the Amended Proposal

- The impacts to listed and unlisted salmon, Pacific Lamprey and sturgeon from summer spill test at Bonneville Dam that begins on June 20, 2004 do not appear to have been estimated and do not appear to be quantified in this analysis.
- The results from the SIMPASS modeling are a relative difference not absolute numbers. The numbers generated from the Brownlee offset are also relative numbers estimated through the use of a regression equation that has not been previously tested for its predicative accuracy. Since neither of these numbers are absolutes, it is inappropriate to just subtract them to estimate the offset. If both numbers were absolute or had some form of confidence intervals around them, this would then be feasible. The regression equation used to estimate the benefit from the Brownlee additional flow has a plus or minus error of 8%, however the proposal indicates a benefit of 1%. With a statistical uncertainty of +/- 8% it is impossible to determine what change will be. Only if the difference between the two operations is greater than 8% could one assert that this operation will result in a benefit.
- Another concern with the Brownlee draft is that there is no discussion of what will happen to August flows. Depending on the operations in August the survival of migrants could be decreased. The proposal did not include an analysis of how operations in August from Brownlee would impact survival in the Snake River. Further, we are still unclear how the proposed July draft will affect the August operation. This needs to be addressed do take into consideration the possibility of increasing survival in July and then decreasing survival in August, and depending on the run timing this could lead to net loss for juveniles.

- The “heavy up” pikeminnow program is referred to throughout the document. However, it is our understanding that this work is included in the BiOp and will not be considered an offset. Further, we are unclear whether extensive fishing will be allowed in the boat exclusion zones near the dams. Without spill, predators will have better and more access to areas near the dam to feed upon juvenile migrants. Therefore even if pike minnows are reduced in some areas, the remaining population will be more effective at preying upon juveniles. This could set up a situation where predation is even worse than with spill.
- None of the impact or offset analysis has undergone any peer review. The amended proposal has gone through several iterations, and taken over six months to develop. During this time it would have been prudent to have a peer review or independent analysis done to determine if the analysis used in the proposal was appropriate.
- CRITFC has reviewed some of the BPA input sheets used in the SIMPASS modeling in the amended proposal. After this review we have found some minor discrepancies and unsure if these were actual the final modeling results. We have not seen BPA’s final completed spreadsheet analysis. This makes it impossible for others to review and verify the results presented in the proposal.
- The amended proposal and the appendixes appear inconsistent. Through regional discussions we have learned that the appendixes refer to an analysis used for unlisted, not the listed stocks. We have not seen this new analysis and have many concerns with comments made in the appendixes. Further the analysis only considers the ESA listed species and not other populations in the ESU. CRITFC believes that this amended proposal impacts analysis should have been applied to both groups, considering the NOAA hatchery policy review and the revised status review that elevates hatchery stocks for ESA consideration.
- As noted in CRITFC’s April 7, 2004 analysis, the amended proposal will likely still cause mortality to thousands of adults that fall back through screen systems and turbines instead of over spillways.
- The proposal fails to address the serious lack of adult salmon returns from the 2001 juvenile outmigration under a no spill condition. The region should wait until the 2004 adult returns come back to the river to fully assess the 2001 no spill operation.
- The revenue from summer spill curtailment would be only about 6% of BPA’s year end balance.
- The proposed offsets are speculative and unproven, whereas spill has consistently shown to provide the best passage survival.
- Other than extremely speculative benefits from pikeminnow reduction, there are no in-kind, specific offsets for 12 stocks of salmon and Pacific lamprey. For example, there is no mitigation proposed for Deschutes River Fall chinook that would be greatly impacted

by the proposed August 1 curtailment of The Dalles and Bonneville spill. Confederated Tribes of the Warm Springs Reservation staff have estimated that about 1,000 adults could be lost under the amended spill proposal (Attachment 4). As mentioned in the June 14, 2004 testimony of Chairman Ron Suppah, the specific loss of fall chinook above Shear's Falls could jeopardize Warm Springs tribal treaty fishing in the Deschutes River

- BPA has contracted with Idaho Power to purchase an additional 100 thousand acre feet (Kaf) out of Idaho Power's Brownlee reservoir during the month of July for \$4 million. The 100 Kaf is inadequate to offset the summer spill loss. Additional water from Brownlee was already been identified in the 2000 BiOp as a measure to be developed through the ongoing ESA consultation process for Hells Canyon. NOAA has delayed this consultation and will not engage IPC or FERC in consultation until next year.
- There is no assurance that Idaho Power will not refill Brownlee in August. Such an action would reduce survival of August migrating listed fall chinook, that have shown to contribute greater adult returns than the earlier portion of the run.
- The Hanford Reach offset that claims a survival improvement of more than 1 million juvenile fry from stranding reduction is based upon a faulty analysis. Without a reasonable quantification of the benefits derived from the protection program, it is not possible to evaluate how anticipated mortality impacts from curtailment of summer spill compare with this proposed "offset".
- Any possible benefits that may have accrued from the Hanford Reach offset are completed, whether or not the summer spill proposal is implemented. Curtailing summer spill would reduce survival of any fish that would have benefited from the Hanford Reach offset.
- Flow fluctuation criteria from the 2004 Vernita Bar Plus Agreement is the foundation operation of the Hanford offset. BPA has claimed a survival improvement offset from meeting the flow fluctuation criteria, but the criteria have been violated numerous times this spring.
- The impact comparison of pre- versus post-Juvenile Fall Chinook Protection Program is erroneous and invalid. Completely different sampling methods were used during the two time periods before and after empirical data was obtained (1998 and 1999-2003). Due to the limitations of the 1998 pilot sampling program, the impact estimate was not derived using field data, but rather using area expansions based on undocumented estimates of fish density. A completely different sampling program was developed for 1999-2003 that was based on a random field sampling protocol which produced impact estimates based on an area expansion. There are significant problems with the Action Agencies analysis of the stranding offset. BPA used different methods for the pre and post sampling periods in the analysis. BPA assumed a fixed fish/unit of 0.021 fish per square foot for the pre-sampling period and the used empirical data for the post sampling periods 200-2003. The data from the 2001 field data was excluded biasing the estimate because the 2001 season saw large numbers of juvenile stranding. Further, CRITFC and USFWS



preliminary field estimates in 2004 indicate that substantial stranding is still occurring despite the implementation of the Vernita Bar Plus Agreement. Because both the biological sampling and the methodology used to expand biological data to impact estimates are not consistent across the two time periods, the Action Agencies comparison between the two time periods is erroneous and invalid.

- Current Hanford Reach entrapment studies indicate the benefit of the Protection Plan is grossly over-estimated. A cooperative study by the Alaska Department of Fish and Game, Columbia River Inter-Tribal Fish Commission, Yakama Nation, Washington Department of Fish and Wildlife, U.S. Geological Survey, and U.S. Fish and Wildlife Service was conducted during the spring of 2003 to develop an entrapment impact estimate for the entire 51-mile Hanford Reach. Physical and biological sampling and modeling were conducted throughout the Reach to evaluate the effect of flow fluctuations that actually occurred during 2003 on entrapment mortality of fall chinook. The preliminary estimate of entrapment mortality only (stranding mortality not included), is roughly an order of magnitude greater than the estimate derived for 2003 (154,853) from the reduced stranding area that was monitored. McMichael et.al. (2003) calculated a mortality for the entire Reach which was an area-based expansion of the figure cited above. Their estimate (527,922) was roughly one third of the preliminary estimate generated from the current studies.
- Considering the two comments above, it is not currently possible to quantify the benefits associated with the Hanford Reach “protection program”. Without a reasonable quantification of the benefits derived from the protection program, it is not possible to evaluate how anticipated mortality impacts from curtailment of summer spill compare with this proposed “offset”.
- This proposed Hanford Reach offset provides little or no mitigation for Priest Rapids hatchery, Ringold hatchery, or other mid-Columbia hatcheries that produce sub-yearling summer or fall chinook. Hatchery reared summer and fall chinook are typically released at sizes close to 100 mm or larger. They are also actively migrating downstream. As a result, their susceptibility to stranding or entrapment would likely be minimal.
- The pikeminnow offset benefits are speculative and not likely and cannot be applied to listed fall chinook because they are required under the 2000 Biological Opinion.
- The \$2 million hatchery and \$2 million habitat offsets are inadequate and will not provide in-kind mitigation for stocks impacted by loss of summer spill.
- BPA recently eliminated \$ 5 million from the NWPCC Fish and Wildlife Program. Now BPA is proposing \$3.3 million in funding to offset reduction in summer spill. The funding offsets are uncertain in terms of benefits for fall chinook, lamprey and other stocks that would be impacted by the summer spill proposal.
- The removable spillway weir (RSW) offset is not logical. It makes no sense to consider adding RSWs to additional dams until the Lower Granite RSW is tested for summer

migrant passage. The Action Agencies oppose summer RSW testing because some spill is required which results in lost power revenues.

- The Action Agencies have failed to consider **conservation of stock diversity** in the proposal as necessary to rebuild depressed populations. For example, as CRITFC stated in the April 7, 2004 comments on the initial summer spill proposal, salmon that migrate in August as juveniles are larger and have higher smolt-to-adult returns, older age classes and contribute a greater proportion to ocean, in-river harvest and the spawning grounds. The amended spill proposal will select against this critical component of the run. The amended spill proposal failed to address this critical issue.
- The amended proposal only considers the number of salmon that arrive downstream of Bonneville Dam, not the passage route that the salmon took in arriving to that destination. In this respect, the amended proposal fails to account for **delayed mortality effects from different passage routes** that substantially affect adult returns as expressed in the scientific literature (i.e. Budy et al. 2002). For example, the 1989-1993 Bonneville Survival study showed that juvenile survival and subsequent adult returns were greatest from study groups that were spilled over Bonneville Dam compared to those that were passed through turbines or through the screen bypass system (Gilbreath et al. 1993; Dawley et al. 1996). There was no difference in survival rates from juvenile that passed the spillway from those that were released downstream of the dam (NOAA Fisheries Passage of Adult and Juvenile Salmon through Federal Columbia Power System Dams May 2004 Technical Memorandum). In failing to address this issue, the Corps and BPA significantly underestimate impacts on stock survival and productivity that cannot be determined with the simple SIMPASS spreadsheet model.
- The proposal is highly dependent on the efficacy of juvenile transportation. The best available scientific information from smolt-to-adult returns indicates that fall chinook that migrate in-river have higher adult returns than transported fish. To increase stock survival and productivity, **more** fish should be allowed in-river migration under **more** spill than the Biological Opinion, not less as under the Action Agency spill proposal.
- CRITFC is concerned that BPA and the Corps are taking actions and making commitments prior to issuing a final Record of Decision on the amended summer spill proposal.
  - The Bonneville spill test is scheduled to start on June 20<sup>th</sup>. The Joint Fishery Managers, excluding NOAA Fisheries, provided May 18, 2004 comments opposing the spill test based upon a flawed study design and other shortcomings.
  - Lyons Ferry subyearlings would typically be released by now or within the next week. By not releasing them, BPA is implementing its proposal prior to a final decision. Moreover, if the spill proposal is rejected, it may be too late or non-optimal conditions for a subyearling release.

- BPA has already committed one million dollars to Idaho Power Company merely for the option to purchase additional flow from Brownlee in July.
- BPA has already increased funding for its northern pikeminnow removal program.

### Appendix Comments

Appendix A: We are uncertain what this section refers to. After discussion among regional entities we have determined that the comments from this section do not apply to the analysis used for the ESA only fish. These comments refer to the analysis, which does not appear to be included for the other stocks. We question the rationale that these comments are not appropriate for the ESA fish analysis but are appropriate for the unlisted stocks. We request a review of the data and rationale used by the Corps and BPA to make that determination.

Page 2 Comment Response 1. The proposal states that, “For purposes of relative comparisons, SIMPASS is sufficient to partition the fish into the different passage routes of differing expected survivals to determine potential relative differences in overall survival.” We agree that SIMPASS determines relative differences, however, the model outputs are being used as absolute numbers (without confidence intervals) and then being compared to relative outputs from other models that are also being treated as absolute numbers. This is an inappropriate use of the model. Further, the level of uncertainty surrounding the range of absolute and relative estimates is not well understood. To our knowledge, no analysis has been completed that addressed this very issue. Without proper analysis, policy makers have no way of knowing the range of uncertainty around the estimates. It is one thing to say that the end user understands uncertainty, it is quite another to say that the end user understands the size of the uncertainty generated in this analysis.

Page 3. Comment Response 2. The proposal states a “D” value of 0.24 was used for Snake River Fall chinook when in fact the analysis uses 0.20. We further dispute that the analysis is insensitive to a differential delayed or “D” value. This is not true when considering survival of juveniles to below Bonneville. By reducing spill a SIMPASS modeler can increase the number of juveniles transported and depending on the “D” value used, the in-river survival estimate the number of surviving juveniles to below Bonneville will be affected.

Page 3. Comment Response 3. The amended proposal asserts that incorporation of a wide range of SAR’s for adult returns ensures that sideboards for the analysis has been completed. We disagree. This assertion assumes that SAR’s are constant for all migrants from a group. In previous CRITFC comments on the spill proposal we have shown that there is a differences in SAR’s for migrants depending on route of passage and time of passage. Assuming that SARs are constant masks these differences and allows the end user/policy makers to reach an erroneous conclusion about the level of potential impact represented in the amended proposal. Further, the amended proposal states that since the SIMPASS analysis, the adult-return based analysis, a comparison of estimated returns to actual returns and outputs from the CRiSP model agree then this analysis is reasonable. However, we

contend that by using flawed analysis to verify the results reported in the proposal does not equate to validation. CRITFC has accomplished similar analyses with these techniques without using CRiSP, with other assumptions that indicated the importance of spill during the summer. These analyses also indicated that those outputs were reasonable. The key issue is that there is such large uncertainty with these methodologies that depending on the desired output, it is entirely possible to generate scenarios where any desired output can be obtained they can be attained, even if those outputs do not make biological or logical sense. Thus, it is possible to increase survival of migrants that pass through spill at upriver dams when these same migrants are passed through lower river dams without spill.

Page 4. Comment Response 6. The proposal states that delayed hydrosystem mortality and/or extra mortality were not included in the analysis since these analysis are based on, “extremely small sample sizes.” However, the same proposal uses extremely small samples sizes of adult fallback information to determine that no impact to escapement will occur due to fallback during periods of no spill. We contend, as well as the proposal that there is very little information to base this on as well, yet the proposal makes the claim that fallback without spill is not a concern. We refer the Corps and BPA 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 the report the researchers state that 25% of adult fish that fallback through a bypass system are lost to due unaccountable factors. This indicates that reducing spill and forcing more fish through juvenile screen bypass systems would be detrimental. Reviewing juvenile monitoring data at the dams during 2001 no spill conditions, adults are present. For example, at the McNary juvenile bypass several hundred adults salmon per week are present. Further, the Corps’ 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 which has 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 would indicate differently. This information was not present in the proposal.

Page 4. Comment Response 9. This is in error since the ESA analysis in the proposal does use the 2% and 4% increase in pool mortality when spill is shut off. We contend that this is appropriate to use for all stocks not just the ESA listed Snake River migrants.

Page 5 Comment response 11. Refer to comment response 3 above. We contend that using a constant SAR for all migrants regardless of method of passage and timing is incorrect. Careful review of the data indicated that SAR’s vary depending on the migration time, spatial and temporal components of the stock and juvenile dam passage route. Therefore, the amended analysis needs to use different SAR’s for different groups in the migration. Some of the groups may well have SAR of 10 percent while others depending on method and time of passage may have SAR’s of 1% or even less.

Page 5 Comment Response 12. Refer to comment response 6 above. We contend that this proposal did not review all the data available, and only reviewed radio tagged escapement data which has samples size of single digits for some of there estimates. Using actual fall

back numbers generated at projects with bypasses during times without spill need to be done. Staff has had limited time to review this information and will be further evaluating this element of the proposal.

Page 9. The amended proposal states that CRiSP is most effective when few parameters are changed from scenario to scenario. We question its usefulness in this analysis since reductions of spill change many parameters. Forebay predation changes, outfall survival can be affected. Fish guidance efficiency is reduced through the season and it is unclear if this was captured in this analysis. While SIMPASS has its limitations, at least these parameters were changed in the analysis to address these concerns. If the model is insensitive to these parameters then we question its ability to adequately detect survival differences.

## Conclusion

The second resolution of the Affiliated Tribes of Northwest Indians opposing summer spill curtailment,<sup>4</sup> reflects the concerns of the Commission and its member tribes. These concerns have not been alleviated with the amended summer spill proposal. The Columbia River salmon, Pacific lamprey and sturgeon need a healthy river environment. It is the tribes' duty to speak on behalf of the salmon. We urge the action agencies to withdraw the amended summer spill curtailment proposal. Thank you for the opportunity to comment. We intend to supplement these comments in the future.

Sincerely,



Olney Patt, Jr.  
Executive Director

Attachments 1-4

cc: Bob Lohn, NOAA  
Rod Sando, CBFWA  
Kevin Duffy, ADFG

---

<sup>4</sup> The second resolution was submitted for the record by Jay Minthorn, Vice Chairman of the Columbia River Inter-Tribal Fish Commission to the Corps and BPA at the federal executive public meeting on June 14, 2004.

## References

- Jepson, M.A., Bjornn, Perry et al. "Evaluation of Adult Salmon and Steelhead via Juvenile Bypass Systems at Bonneville, John Day, McNary and Ice Harbor Dams: 2000 -2001" Draft 2004 U.S. Army Corps of Engineers for Project ADS-P-0012.
- Takata, H. K., and T. A. Friesen. 2003. Development of a System-wide Predator Control Program: Fisheries Evaluation. Annual report to Bonneville Power Administration.
- Hankin, D. and J. Richards. 2000. The Northern Pikeminnow Management Program: An independent review of program justification, performance, and cost-effectiveness.

## Attachment 1

# State, Federal and Tribal Fishery Agencies Joint Technical Staff

*Columbia River Inter-tribal Fish Commission  
Idaho Department of Fish and Game  
Oregon Department of Fish and Wildlife  
US Fish and Wildlife Service  
Washington Department of Fish and Wildlife*

May 18, 2004

Rock Peters  
Corps of Engineers  
Portland District  
PO Box 2946-PM-E  
Portland, OR 97208-2946

Dear Mr. Peters:

RE: Review Comment SPE-04-NEW

The technical staffs of the state, tribal and federal salmon management agencies have reviewed the project entitled “Summer Spill Evaluation”, study code SPE-04-New, proposed by the US Geological Survey for funding through the US Army Corps of Engineers Columbia River Fishery Management Program. We had planned to provide these comments at an earlier date, but the considerable workload created by the response and analysis requirements of the Federal proposal to reduce summer spill for fish passage, was assigned priority. Our review conclusions and recommendations are followed by detailed discussion of our specific comments. **We do not support the implementation of this study.**

## **Conclusions and Recommendations**

- The regional science group did not reach agreement on either the need for the project-by-project study nor was there regional scientific agreement that the agencies and tribes system-wide proposed study was not feasible. The agencies and tribes continue to support a system-wide, life-cycle approach.
- The problem statement is inaccurate and should be modified to represent the actual issues, which have precipitated this study proposal. The introductory paragraphs in the problem statement are intended to establish the context in which the study is proposed, describing the environment and management context for which the study is developed. It is important that the context be established accurately, in order to properly understand the intended management application of the study results. The intended application of results establishes study design criteria.



- The problem being addressed is a financial one, not a biological one. This should be clearly stated. The reason for the BIOP spill levels is due to the fact that spill is considered the safest passage route at Bonneville Dam. Bonneville Power Administration aggressively promoted the need for this study solely on the basis of their objective of reducing or eliminating cost of summer spill in hydropower production foregone.
- The agencies and tribes do not believe that the conduct of this study will provide a sufficient basis for modifying the Biological Opinion levels of summer spill for fish passage at Bonneville Dam or any other project. The Federal proposal to reduce summer spill for fish passage includes spill reductions or elimination at Ice Harbor, John Day, The Dalles, and Bonneville dams. The proposed study will not provide any information applicable to the impacts of decreasing spill at these other projects. The proposed study does not address the actual mechanisms of differences in spill passage survival. As has been observed at studies at The Dalles and Ice Harbor, project variables like specific spill bays, tailrace elevations, spill gate openings can affect spill passage and survival rates. The proposed study does not address these effects, nor does it address other potential covariates such as fish size, fish condition, environmental variables, origin and variable hydraulics within treatments.
- Delayed mortality impacts from specific passage routes will not be evaluated. This delayed mortality can be significantly different between passage routes. For example, Gilbreath et al. (1993) determined from estuary and adult recoveries that turbine and screen system passage at Bonneville Dam for subyearling chinook was three- to four-fold higher than spill passage. This is critical since smolt to adult return data indicates that indirect impacts of reduced spill result in “extra mortality”. Sequential passage through several bypasses could have cumulative indirect effects that are not apparent in direct survival studies.
- The importance of spill for fish passage cannot be determined without a thorough consideration and understanding of the system wide cumulative effects of hydrosystem operations and the cumulative success of mitigation measures in addressing those impacts. For example, the importance of spill at Bonneville Dam cannot be determined without an understanding of the efficacy of spill or transportation of smolts at upstream projects.
- There is no evaluation plan component to determine the impacts to adult salmon and Pacific lamprey under the proposed study design. Reduction of spill will force many stocks, both listed under the ESA and non-listed but nevertheless very important, to fulfill treaty-trust responsibilities, obligations under the *U.S.-Canada Salmon Treaty*, equitable treatment under the Northwest Power and Planning Conservation Act and obligations under the Fish and Wildlife Coordination Act. This is a key deficiency of the evaluation plan.
- The null hypothesis of the proposed study is inappropriate. The study is designed to show no statistically significant difference between spill conditions. Review of other radio tag study results, summarized as part of this proposal; indicate that this is the expected outcome. This study design and null hypothesis shifts the risk and the burden of proof to the fishery resource in favor of the more certain economic benefits to the hydrosystem. The null hypothesis should represent what we presently believe to be true, and should be  $H_0$ : Survival at 50 Kcfs spill < Survival at 75 Kcfs spill. The alternative is therefore  $H_a$ : Survival at 50 Kcfs > or = Survival at 75 Kcfs. Reductions in spill should be assumed to be harmful unless proven otherwise. Utilizing power analysis to interpret statistical tests, as in this proposal, is inappropriate (Hoenig and Heisey 2002). The null hypothesis as proposed by the COE controls “harmful” errors by undefined Type II (beta) errors. The agencies and tribes preferred  $H_0$  controls “harmful” errors by defined Type I (alpha) error.

## **Purpose of the Study**

The proposal is purportedly a response to three issues: transportation of smolts results in few listed fish in the Lower Columbia, balloon tag studies at the Dalles indicated high predation rates on spillway passed fish, survival studies have not been conducted in August. The proposal states that the region has called for a study of summer spill for subyearling chinook because of these issues. However, the proposal incorrectly states that these issues have precipitated the demand for a summer spill study. The correct and appropriate management context for this study is that the Bonneville Power Administration has raised the demand for a summer spill study on the basis of their determination and analysis of the cost of summer spill relative to the number of listed fish impacted by reducing or eliminating summer spill. This potential management decision requires rigorous and precise analysis of the potential life-cycle consequences of spill reduction, and an evaluation plan capable of monitoring the full extent of the detrimental effects on a life-cycle basis.

## **Transportation**

The effectiveness of the transportation of fall chinook is highly uncertain. Transportation may not be the optimal strategy for benefiting listed and non-listed fish. In-river migration with the provision of spillway passage may indeed be a better strategy for increasing life-cycle survival rates. Because of this transportation uncertainty, the assumption that few listed fish will be in the Lower Columbia cannot be used as a justification for spill reductions. Transportation of sub-yearling migrants at McNary and the Snake River projects can only be considered an interim program pending the outcome of on-going transportation studies. Preliminary review of incomplete life-cycle returns does not look promising for the continuation of the transportation program. Recent preliminary analyses of SAR data for transported and in-river migrating fall chinook raises serious questions regarding the efficacy of fall chinook transportation to recover stocks to ESA and tribal management goals (April 6, 2004 memo from the FPC to Lothrop and Tweit).

## **The Dalles Dam study August 2002 – Balloon Tag Studies**

We believe that The Dalles Dam balloon tag study provides an insufficient basis for the conduct of this study. Results from balloon tag studies are highly suspect and do not provide a robust basis for any management decisions; neither do they provide a valid basis for need or conduct of this study. In fact the agencies and tribes have repeatedly voiced and documented their concern and objections regarding the use and appropriate application of data generated through balloon tag studies. The Dalles 2002 balloon tag study results, particularly for summer migrants are inconclusive and highly speculative.

## **Assumptions**

Several assumptions underlying this study were listed in the proposal. Without verification of these assumptions, results from this study would be highly suspect. We question the validity of each of the four listed assumptions. Specifically, these assumptions included:

- 1) Spill treatments affect survival rates for fish <110 mm in the same way they affect rates for fish >110mm. In other words the sub-sampled population of fish >110 mm is representative of the entire population.** The assumption that fish greater than 110 mm survive at similar rate as smaller fish may not be true. First, these fish are likely to

behave very differently in terms of migration rates. Also, predation vulnerability may well be higher for smaller fish. This assumption is critical to the results of the proposed study. NOAA fisheries have hypothesized in their technical memorandum that fish size affects passage route and survival.

- 2) **The affects of spill treatments observed between ~20 June-20 July do not change in late July-August.** The assumption that survival during June and July is similar to August is also unlikely to be true. The study does not measure impacts of changes in operations at a time when proposed operations would occur. Given reduction in flows, increased river temperatures and reduction in water quality and consequently poorer fish condition, it is unlikely that June and July studies represent August fish. Impacts of turbine passage or bypass passage at warmer temperatures may be more severe during the hottest days of the year than would be measured by an earlier study. This fact acutely constrains the radio-tag study approach because in late July and August, river temperatures are too high to safely handle and tag fish. This assumption is critical to the results of the proposed study. Summer spill studies at The Dalles Dam showed a decline in survival in the later part of the migration. Stock composition and other factors change temporally as the migration season progresses. Further, studies by the Corps at Bonneville Dam indicate that juveniles change their vertical orientation in the water column during the summer, seeking lower depths later in the summer.
- 3) **The approach assumes that there are no treatment effects that occur outside the geographic bounds of the study (e.g. upstream releases and downstream detection sites).** There is no evidence basis presented for this assumption. The study design will attempt to measure direct effects of spill and compare those direct effects between two treatments. However, it is the impacts on adult return rates through the differential passage routes that should be considered the most important measures of hydrosystem effects. It is important that modifications to operations at projects be evaluated with respect to impacts on adult returns; that is, on a life-cycle basis rather than being based on direct survival estimates at individual projects.
- 4) **The approach assumes that project-specific survival rates can be assembled (modeled) to estimate system survival.** There is no empirical basis for this assumption, and none was presented by the authors of this proposal. Assembling project-specific survival rates to estimate system survival, in models such as SIMPASS, has been shown to be faulty, unreliable, and misleading for management decision-making. There are serious impacts of dam passage that are not expressed within the short-reach, survival estimates generated with the radio-telemetry methodology. The Snake River Comparative Survival Study results suggest that differential mortality is occurring in the estuary or ocean environment as a result of different routes of passage within the hydrosystem. Therefore, any study to determine the best operations at a project must account for delayed effects.

## **Additional Concerns**

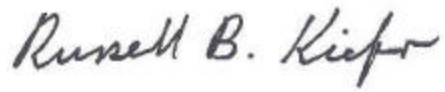
**Biased results:** The use of radio tags has become widespread. Research by Perry and Adams (2001) has shown, that these tags can affect swim performance and buoyancy. A thorough review of the impact of tagging on passage through the dams must be conducted to determine if these tags are comparable to PIT-tags. Small changes in radio-tagged fish behavior caused by the presence of the tags, could affect the proportions and survival rates of fish passing via various routes, and that could in turn, affect comparisons of the impacts of two different project operations as proposed. This would be important in a comparison such as that proposed at Bonneville Dam. This proposal does not cite any study demonstrating that radio-tags do not bias subyearling chinook behavior or survival. In fact the single study they do cite suggests that survival rates were affected by the use of radio-tags, and that the use of these tag types need further evaluation with subyearling chinook.

**Detection of dead fish:** The detection of dead fish at recapture locations can greatly affect study results. In some recent studies, there have been confounding affects caused by dead fish detections. This is an important problem with radio-telemetry studies.

**Unequal treatment and composition of test and control groups:** The study proposes to utilize different fish for treatment and control releases. Treatment and control fish should come from the same source and should receive exactly the same treatment including handling and transportation. Tailwater-released fish would be collected at Bonneville Dam, while forebay-released fish would be collected at John Day Dam. These groups could represent different populations of fish. For example, a large number of subyearling chinook enter the system from the Klickitat and Deschutes Rivers. In addition, the study proposes unequal handling of fish: tailwater-released fish captured at Bonneville Dam would not be transported to release location whereas upriver releases would be transported to The Dalles Dam tailrace. The variable composition and handling of test and control groups raise serious questions regarding the interpretation of study results.

**Test spill level selected without adequate basis:** The test uses 50 kcfs as a proposed minimum spill level. However, this level was never considered or tested for long-term implementation across all seasons or several years. The 50 kcfs was generated from one survival study done in 1989, with only one spillway, spillbay 5. It is unlikely that results from one test in one spill bay represent survival across the whole spillway at the 50 kcfs level. It is prudent to model spill patterns in the 50 kcfs spill volume range to generate the best possible operation for long term spill passage implementation

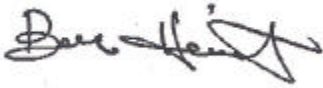
Sincerely,

Handwritten signature of Russell B. Kiefer in cursive script.

Russ Kiefer, IDFG

Handwritten signature of Raymond R. Boyce in cursive script.

Ron Boyce, ODFW

Handwritten signature of Bob Heinith in cursive script.

Bob Heinith, CRITFC

Handwritten signature of Cindy LeFleur in cursive script.

Cindy LeFleur, WDFW

Handwritten signature of David W. Wills in cursive script.

Dave Wills, USFWS

## Attachment 2

# State, Federal and Tribal Fishery Agencies Joint Technical Staff

*Columbia River Inter-Tribal Fish Commission  
Idaho Department of Fish and Game  
Nez Perce Tribe  
Oregon Department of Fish and Wildlife  
Shoshone Bannock Tribe  
US Fish and Wildlife Service  
Washington Department of Fish and Wildlife*

June 14, 2004

Jim Ruff  
NOAA Fisheries  
525 NE Oregon St.  
Portland, OR 97232-2737

Witt Anderson  
NWD Corps of Engineers  
PO Box 2870  
Portland, OR 97208-2870

Greg Delwich  
Bonneville Power Administration  
905 NE 11th Ave / PO Box 3621  
Portland, OR 97208

Dear Mr. Ruff, Mr. Anderson & Mr. Delwich:

The technical staffs of the state, tribal and federal fishery agencies have reviewed the June 8, 2004 Corps of Engineers and Bonneville Power Administration (Action Agencies) proposal to reduce summer spill for fish passage in the Snake and Columbia rivers. The Corps of Engineers and Bonneville Power Administration have not allowed adequate time to review the proposal, the supporting analysis and to prepare comments. The proposal includes three technical appendices, and the NOAA Fisheries analysis as the technical foundation of the proposal, which was not available for review, until June 9, 2004. The Action Agencies allowed only four working days to review and prepare comments.

A regional Executive meeting will take place June 14, 2004 to discuss the proposal with states, tribes and interested parties. We are providing these technical comments for the purpose of constructively informing the discussions and decision on the final proposal that will be provided to NOAA fisheries approximately June 21. Our summary conclusions are followed by detailed discussion of each point.

## *Conclusions*

- The proposed offsets are still poorly described and appear speculative. Thus it remains impossible to determine whether the offsets will actually mitigate the full impacts of reducing spill for summer migrants. Some of the proposed offsets do not apply to summer migrants at all.
- Although the agencies and tribes provided comments to the Action Agencies on February 20, 2004 and on April 9, 2004 on previous Action Agencies proposals to reduce summer spill and offsets to mitigate for impacts. Most of those comments have not been incorporated into the new BPA proposal and analysis. For this reason many of our original comments are reiterated in this review, since they are valid and applicable to this revised proposal.
- The proposal is based upon an inappropriate application of the SIMPAS model, pressing the model beyond its limitations, which are clearly identified in the NOAA Fisheries Biological Opinion and the ISAB review of the model. The proposal utilizes the CRISP model in an attempt to validate the SIMPAS results. The agencies and tribes have repeatedly stated their reservations and concerns regarding the utility and application of the CRISP model.
- The SIMPAS assumptions regarding the benefits of transportation operations for fall chinook present serious potential for underestimating impacts on ESA-listed Snake River fall chinook.
- The impact of the reduction of spill on unlisted stocks is poorly addressed and may not be mitigated adequately.
- The only flow offset that is clearly proposed for listed fish is a draft of 100 KAF of water from Brownlee Reservoir in July. The proposed benefits of the Brownlee flow offset remain uncertain due to difficulties in establishing whether this is “new water”. Past years operations of Brownlee indicate that passing inflow in July as projected by BPA would be highly unusual. Without adequate certainty that this is new water, the Brownlee offset is actually no different than the status quo operation.
- The proposal extends spill at upstream projects 21 days longer than at downstream projects. This approach is contrary to protecting the run at large based upon our knowledge of juvenile passage.
- Our overall conclusion, utilizing the best available biological data, is that the proposed offsets will not mitigate the proposed reductions of summer spill. Instead, the proposed reduction of spill will increase risks to the affected listed and unlisted salmon and steelhead, in addition the proposed offsets are insufficiently described, therefore their benefits remain uncertain and difficult to analyze. In addition, mitigation consideration has not been included for non-listed stocks of fall chinook, such as the Deschutes, Umatilla and Klickitat rivers.
- Additionally, on May 18, 2004, we provided written comments to the Corps of Engineers regarding the inadequacies of the Bonneville Power Administration proposed spill evaluation study plan for Bonneville Dam, titled, “Summer Spill Evaluation”, SPE-04-NEW. Our conclusion and recommendation to the Action Agencies is that the proposed Bonneville spill study will not produce definitive results, applicable to spill management decisions and that the State, Federal and Tribal Agencies Joint Technical Staff do not support the implementation of the study.



- The proposal does not include adequate monitoring of effects of reducing spill or evaluation of the impacts. The agencies and tribes have previously recommended increased PIT tagging efforts on sub-yearling fall chinook.

### ***SIMPAS – Serious application limitations for management decisions***

Like previous proposals this most recent proposed operation is based upon SIMPAS model analysis of impacts of reducing spill and benefits of proposed offsets. Our comments on previous proposals to reduce summer spill and our even earlier comments to the region regarding the appropriate use of the SIMPAS model emphasized the serious limitations of SIMPAS in management decisions, such as the contemplated reduction of summer spill. These limitations were discussed in the NMFS Biological Opinion.

SIMPAS analyses are unable to assess the risk and uncertainty in each of the model parameters. Potential biases in parameters are ignored. Multiplying several estimates together, (propagation of errors) each with their own uncertainty and bias, makes for a very wide range of possible and plausible survival rates. The BPA analysis disregards these important uncertainties, making the analysis of risk to the affected populations unreliable.

Even with the significant limitations of SIMPAS, the Action Agencies have underestimated the impacts of reducing summer spill on listed stocks of salmon. The CRITFC staff has completed an independent SIMPAS analysis utilizing run timing parameters from FPC and NOAA and other model parameters from the previous NOAA Fisheries analysis. The only parameter that was modified was the reservoir mortality for The Dalles, which was set at a 3% decrease instead of 2%, based upon a conservative approach regarding fish passage at the project. Using the Action Agencies' most recent spill curtailment proposal, the CRITFC analysis resulted in a 37% or, 561 fish additional loss of Snake River fall chinook migrants above the Action Agencies' Snake River fall chinook lost estimates. This raises further concerns regarding the adequacies of the proposed offsets for both listed and unlisted fish.

### ***CRISP does not validate SIMPAS***

In response to comments regarding the inappropriate use of the SIMPAS analysis, the Action Agencies utilized the CRISP model results to corroborate SIMPAS. The Action Agencies conclude that the CRISP results validate the SIMPAS results. This entirely misses the point and does not address the concerns regarding the original analysis. The agencies and tribes have previously documented their significant lack of confidence in the CRISP model and the utility of the CRISP model. The CRISP analysis does not validate the results of SIMPAS. Major limitations to SIMPAS for these types of analyses, which we emphasized in comments on previous spill reduction proposals, also apply to CRISP. Peer reviews of the CRISP model (Carpenter et al. 1998) concluded that the CRISP model is over parameterized, too complex, incorporates too many mechanisms and produces overly optimistic projections. The use of the CRISP model does not give validation to the Action Agencies' SIMPAS-derived loss estimates. SIMPAS and CRISP model impact estimates are not robust as they both create relative estimates without confidence intervals. The passage models in general may reasonably represent passage routing and direct passage mortality, but do not account for differential delayed mortality by route of passage that can reduce survival to adult. Specifically the analyses using both models contain the assumption that direct survival of juveniles translates into adult return rates, which is not supported by the best available empirical data (February 20, 2004 Joint Technical Staff Comments). Two important points concerning using SIMPAS (or CRISP) to predict impacts to

fall chinook from summer spill reductions are clear. First, neither SIMPAS nor CRISP accurately predicts adult return rates. Second, the analyses are positively biased, over estimating adult returns, in part because delayed mortality of bypassed in-river groups is not addressed.

### ***Transportation of juvenile fall chinook***

The foundation of the Action Agencies' analysis of impacts and offsets of this proposal is the overriding assumption that transportation of juvenile fall chinook is beneficial compared to in-river migration. The state, federal and tribal fishery agencies submitted extensive comments regarding the basic assumptions of the benefits of transportation in the BPA analysis in comments submitted to the federal agencies on February 20, 2004. The quantitative benefits of transportation for fall chinook juveniles over in-river migration have not been demonstrated. Currently there is no data indicating that screen bypass and transportation provides an adult return benefit over allowing fish to migrate in-river. In fact, recent analysis of smolt-to-adult return rates indicate that a spread-the-risk policy allowing fish to migrate in-river as well as transported, such as in place for spring chinook, may be the most appropriate management approach. The maximization of transportation of fall chinook migrants is key to the Action Agencies analysis since the proportion of fall chinook removed from the river by transportation determines the assessment of impacts to listed stocks and the required offsets to address those impacts. Adult return rates for Hanford Reach and Snake River fall chinook indicate that a disproportionate number of adult fall chinook returns resulted from in-river migrants as juveniles. These are exactly the fish that will be affected by reduction in spill. The Action Agencies' analysis should consider alternative transportation scenarios such as spread-the-risk to assess impacts because the available data indicates that transportation does not provide the benefits assumed in the Action Agencies analysis of impacts and offsets.

### ***Selection against stock biodiversity***

The proposal fails to identify the issue that eliminating August spill will cause selection against later migrating stock components that contribute older year classes and higher proportions of adults to ocean, in-river harvest and the spawning grounds. PIT-tag return of Snake River Fall chinook and coded-wire returns of Hanford Fall chinook support the importance of later migrating juveniles to sock biodiversity (Tiffan et al. 2000). The preservation of remaining stock biodiversity is a critical component to recovery of Columbia River salmon runs (Williams et al. 1996). Although this issue was raised in our previous comments, it was not addressed in the most recent proposal.

### ***The Brownlee offset benefits are highly uncertain in terms of operations***

The Action Agencies' proposal to reduce spill includes a proposed mitigation offset action of drafting an additional 100 KAF from Brownlee Reservoir from July 8-28. Idaho Power Company has conditioned their commitment to pass inflow in July on the level of customer demand and market. The Brownlee offset as proposed is not clearly an additional action because the base operation that would be in place absent implementation of this proposal is not identified. Review of historical Brownlee operations shows that substantial drafts have occurred in July in past years. Over the past few years, Idaho Power Company released 2-3 feet of Brownlee water in July. Review of the past five years indicates that Idaho Power Company has not passed inflow in July. The BPA proposal indicates that Idaho Power Company indicated that operations could

vary depending on customer demand and market. Based upon our review of historical operations it appears reasonable to assume that Idaho Power Company is likely to have customer and market demands in July. In the period of July 7 through July 31 Brownlee drafted 301 KAF in 1999, 313 KAF in 2000, 86 KAF in 2001, 29 KAF in 2002 and 77 KAF in 2003. The runoff volume for the June final January-July runoff volume forecast for the Snake River at Lower Granite is 21.1 MAF, this volume is between the 18.4 MAF runoff volume that occurred in 2001 and the 23.8 MAF runoff volume that occurred in 2003.

Based on historical operations and the commitment to pass in flow in July, it appears probable that Idaho Power Company will implement their stated caveat, "passing inflow will be dependent on customer demand and market". Further, if it established that the 100 KAF is an additional draft over base operations, refill or decrease in draft rate of Brownlee in August could result in an additional adverse impact on juveniles migrating in August, which would then reduce or eliminate the net benefit of the proposed offset. Refill in August would be detrimental to listed and unlisted stocks. Further, the Brownlee proposed offset is not adequately defined in relation to the US Bureau of Reclamation release of the 300-400 KAF upper Snake River water volume. Therefore it is impossible to determine whether the proposed Brownlee draft is "new volume" or if it is simply shaping of the USBR commitment of Upper Snake River water.

***The Brownlee benefits are highly uncertain and flow augmentation is inadequate***

We are in full agreement with the Action Agencies admonition regarding their analysis of the effects and risks inherent in reliance on offsets. The NOAA analysis illustrated the wide prediction limits associated with the analysis if the Brownlee proposed flow offset. The Action Agencies characterized the limitations of their analysis as follows:

*"In reviewing these values it must be kept in mind that the confidence intervals around these estimates far exceed the level of effect that we are attempting to estimate. The same is true of the estimated effects of the offsets. We recognize these uncertainties and wish to emphasize that these values do not represent predicted values. They do, however, document our best efforts to inform our determination with a consideration of the relative magnitude of the effects and therefore the risks inherent in the reliance on offsets."*

Analysis of flow and temperature effects on survival of wild Snake River fall chinook clearly show that increased flow and decreased water temperature during downstream migration increases the survival of juvenile fall chinook (Connor and Burge 2003). Fall chinook juvenile migration data shows that migration timing distribution and travel time is inversely related to migration flow. Higher migration flows result in shorter travel times. The joint agencies and tribes comments submitted to the Action Agencies, on February 20, 2004, emphasized data supporting the positive effect of higher flows and lower water temperatures on fall chinook juvenile survival. We suggested that significant increases in migration flow could result in earlier juvenile fall chinook passage timing, which could reduce the proportion of the migration distribution, which would be present during the later periods when termination of spill is proposed. The Brownlee offset as proposed includes significant operations limit that do not include the potential to increase flows more than 2 kcfs per day. Further, as described by BPA staff at the June 10, 2004 Implementation Team Meeting, the flows would not be constant over the proposed three-week release period, but would fluctuate to follow load and thus likely be reduced at night and on weekends. The aspects of load following was not incorporated in to the

NOAA Fisheries analysis. Larger flow increases would be required to effectively change passage distributions to move the migration through the river prior to the ending of spill as recommended in the Joint Agencies and Tribes February 20, 2004 comments.

***Spill for fish passage dates are inconsistent with passage timing data***

The Action Agencies proposal provides summer spill for fish passage through August 21 at John Day and Ice Harbor Dam and provides spill at Bonneville and The Dalles dams through July 31. This is counter-intuitive and is a result of the total reliance on the SIMPAS model analysis without consideration of other relevant passage data. This means that fish, which are bypassed in spill through August 21 at Ice Harbor and John Day upstream, would then be forced to pass through turbines at The Dalles and Bonneville dams. Studies of direct turbine mortality at The Dalles and Bonneville dams indicate that turbine mortality is significant, 16 % and 9% respectively. Delayed indirect turbine passage mortality to sub-yearling chinook was estimated by NMFS at 18% (Gilbreath et al. 1993). The significant investment and benefit of providing protection to this fish at upstream projects would be squandered is by forcing these fish to pass through the particularly lethal route of The Dalles and Bonneville dams.

Historic fish passage distribution and travel time data were utilized to examine the impact of the BPA summer spill dates on the protection of the sub-yearling passage distribution of fall chinook in the Columbia and Snake Rivers. Utilizing historic passage distributions at Lower Monumental Dam and travel time to McNary Dam and passage distributions at John Day Dam, we estimated travel times to illustrate the proportion of the sub-yearling chinook passage distribution that would receive spill protection with the implementation of the BPA proposed spill dates. The following table illustrates that in low flow years such as 2001, the BPA proposal would provide protection to less than 95% of the passage distribution in the Snake and Columbia Rivers which has been the premise of the spill for fish passage mitigation measures. The historical data indicates that in low flow conditions the spill period should be longer to facilitate the extended migration, and that curtailing spill earlier has less impact in higher flow years. In low flow years spill should be provided for a longer period of time to protect the passage distribution.

Percent of the sub-yearling at large passage distribution protected by the BPA proposal

Year	Bonneville August 1	John Day August 21	Ice Harbor August 21
1998	88.3%	99.3%	95.5%
1999	92.3%	98.9%	95.6%
2000	84.7%	97.7%	94.7%
2001	49.7%	91.3%	91.9%
2002	93.8%	98.9%	97.4%
2003	86.6%	95.5%	97.7%

We utilized historical travel time data for sub-yearling fall chinook to estimate a reasonable date for end of spill at The Dalles and Bonneville dams based upon the proposed August 21, end of spill at John Day and Ice Harbor. Of the sub-yearling chinook (combination of hatchery and wild stocks) passing Ice Harbor Dam and continuing in-river to Bonneville Dam, ninety percent of the run will cover this 187-mile reach in 11 to 13 days based on PIT tag data of

subyearling chinook detected at both Lower Monumental and Bonneville dams for migration years 1998, 1999, 2002 and 2003. During the extremely low flow year of 2001, the time to transit this reach extended to 32 days. No estimate was available for 2000 due to only two PIT tagged subyearling Chinook detected at both dams. If we utilize 13 days as a base travel time that is not exceeded by over 10% of the PIT tagged subyearling Chinook in all extremely low flow years, and apportion this base travel time between dams based on mileage covered, then the base travel time would be 8 days from Ice Harbor to John Day Dam, 2 days from John Day to The Dalles Dam, and 3 days from The Dalles to Bonneville Dam. Adding these base travel times to the August 21 end of spill date at Ice Harbor Dam provides dates of August 29 at John Day Dam, August 31 at The Dalles Dam, and September 3 at Bonneville Dam. These dates would provide passage in the lower river for fish that passed Ice Harbor during the implementation of the spill program.

### ***Hanford Reach Offset***

We must reiterate our February 20, 2004 comments on the Hanford Reach offset by reference. The Hanford Reach “protection program” was conceived in 1999, and developed in its current form as part of the Federal Energy Regulatory Commission relicensing of the Grant County PUD’s Priest Rapids/Wanapum hydroelectric project. The program is currently in place, will continue to be in place, and Grant County PUD has committed to implementing the program as part of the PUD’s FERC licensed operations. Consequently, this program cannot also be claimed as mitigation for the effect of curtailing summer spill by the Action Agencies. In addition the measures developed under the “protection program” to offset the impact of flow fluctuations in the Hanford Reach would be compromised by the loss of fish associated with curtailment of summer spill. Following are additional factors to consider regarding the “protection agreement” and its application to the Action Agencies summer spill proposal:

- **The impact comparison of pre-versus post-Juvenile Fall Chinook Protection Program is erroneous and invalid.** Completely different sampling methods were used during the two time periods (1998 and 1999-2003). Due to the limitations of the 1998 sampling program, the impact estimate was not derived using field data, but rather using area expansions based on undocumented estimates of fish density. A completely different sampling program was developed for 1999-2003 that was based on a random field sampling protocol, which produced impact estimates based on an area expansion. Because both the biological sampling and the methodology used to expand biological data to impact estimates are not consistent across the two time periods, the Action Agencies comparison between the two time periods is erroneous and invalid.
- **Current Hanford Reach entrapment studies will provide additional insight into the Reach-wide impacts of flow fluctuations.** A cooperative study by the Alaska Department of Fish and Game, Columbia River Inter-Tribal Fish Commission, Yakama Nation, Washington Department of Fish and Wildlife, U.S. Geological Survey and U.S. Fish and Wildlife Service was conducted during the spring of 2003 to develop an entrapment impact estimate for the entire 51-mile Hanford Reach. Additional analysis are planned that will provide useful insight into the Reach-wide effect of flow fluctuations and provide recommendations for

operations that will further reduce impacts to rearing juvenile fall chinook salmon. Additional measures based on these analyses over and above the current protection measures might represent new mitigation.

- **This proposed offset provides little or no mitigation for Priest Rapids hatchery, Ringgold hatchery or other mid-Columbia hatcheries that produce sub-yearling summer or fall chinook.** Hatchery reared summer and fall chinook are typically released at sizes close to 100 mm or larger. They are also actively migrating downstream. As a result, their susceptibility to stranding or entrapment would likely be minimal.
- **Impacts and mitigation of reduced spill on non-listed stocks of fall chinook such as the Deschutes, Umatilla and Klickitat rivers are not addressed.**

***Acceleration of RSW installation does not benefit the effected species, fall chinook***

Unless the Action Agencies specifically identify a commitment to test and operate existing and new RSWs through August, the acceleration of RSW installation does not represent an offset for summer spill reductions because it does not provide any actual mitigation for fall chinook. Depending on the operations, the RSW may primarily provide benefits to BPA because they allow fish passage with reduced spill levels. There are many outstanding questions that need to be resolved in order to guide widespread installation of RSWs. For example, there is little logic in moving forward with RSW installation at other projects when the Lower Granite RSW has yet to be evaluated for summer migrants. On May 10, 2004 the state, federal and tribal fishery agencies submitted a request to the Action Agencies to begin this research in 2004. However, this request was denied by the Corps, stating that the RSW summer test, which would benefit summer migrants, was not a high priority and that the research funds had been re-distributed to other projects. BPA has continued to oppose Lower Granite RSW testing for summer migrants as too costly due to power losses. The Action Agencies proposal to accelerate RSW installation as an offset for reduced summer spill is incongruous with respect to resolving passage for summer migrants at Lower Granite Dam before considering the technology at other dams.

***The Hatchery and habitat fund offset and the NWPC offset must be carefully considered***

BPA recently eliminated \$5 million from the NWPC Fish and Wildlife Program. Now BPA is proposing \$3.3 million in funding to offset reduction in summer spill. The funding offsets are uncertain in terms of benefits for fall chinook, lamprey and other stocks that would be impacted by the summer proposal.

***Northern Pikeminnow program increase***

As we indicated in our comments on the first and the second Action Agencies' proposals, the pikeminnow offset is unlikely to mitigate the impacts of reducing spill. The agencies and tribes provided detailed analysis and data in February 20, 2004 and on April 9, 2004, which showed that additional reduction of pikeminnow predation and consumption rates, is highly unlikely. Any real increase in pikeminnow exploitation rates would require extensive catch effort in the forebay and tailrace boat restricted zones of the dams. Safety and security issues, in these areas make real expansion of the program unlikely.

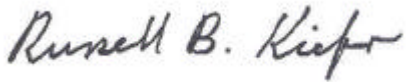
### ***The Adult Passage Impact Analysis is speculative and does not support its conclusion***

Appendix B of the proposal contains an Action Agency analysis of adult fallback impacts from spill curtailment. Although, the Action Agencies declined to include delayed and or extra mortality in their analysis because they are based upon “extremely small sample sizes”, the same proposal utilizes extremely small sample sizes in their consideration of adult fall back during no spill periods. The metric utilized is fallback escapement to upper river areas- not direct impacts to fallback fish. In addition, the analysis depended upon extremely small sample sizes of radio-tagged fish, in some cases single digits of fish. However, the analysis also states that 80 radio tagged fall chinook fell back through Bonneville Dam during no-spill periods and that 20 radio tagged fall chinook fell back through Ice Harbor during no-spill periods and that escapement was about 90% for these fish to upriver areas. The analysis also states that there is a 15-25% lower escapement for adult steelhead that fallback through non-spillway routes at Bonneville Dam. Recent research, entitled “Evaluation of Adult Salmon and Steelhead via Juvenile Bypass Systems at Bonneville, John Day, McNary and Ice Harbor Dams, 2000-2001” concluded that 25% of the adult fish that fallback through a bypass system are lost due to unaccountable factors. Based upon these facts and data, there appears ample evidence that the spill proposal will increase mortality and reduce escapement of listed and unlisted salmon and steelhead adults. The Action Agencies have no direct evidence that reduction of or ending of spill will not impact adult escapement, and studies from the literature indicate that adult fallback through routes other than spill will significantly increase mortality. The precautionary principal requires shifting the burden of proof away from the critical resource in the face of uncertainty.

### ***Conclusion***

The State, Federal and Tribal Fishery Agencies appreciate the opportunity to comment on the Action Agencies’ revised proposal to curtail summer spill and provide projects to offset the impacts of spill curtailment. We have not been afforded adequate time to provide comments on the most recent proposal, thus these comments must be considered preliminary. We find that the revised spill proposal impacts to Snake River fall chinook are likely underestimated by the Action Agencies and that the impacts to unlisted stocks may be substantial. The Action Agencies have not considered empirical data with respect to the efficacy of juvenile transportation and delayed mortality through turbine and screen system passage routes that we believe may significantly reduce adult returns to harvest, hatcheries and the spawning grounds. Further, as we commented on the initial spill curtailment proposal, we believe the offsets are uncertain and inadequate to provide in-kind mitigation to stocks that would be affected by the proposed summer spill curtailment. In addition, the full impacts of curtailing summer spill in 2001 will not be determined until this year’s adult fall chinook year class returns to the Columbia River.

Sincerely,



Russ Kiefer, IDFG



Dave Statler, NPT



Ron Boyce, ODFW



Keith Kutchins, SBT



Bob Heinith, CRITFC



Rod Woodin, WDFW



Dave Wills, USFWS



## References

- 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.
- Carpenter, S., J.Collie, S.Saila and C.Walters. 1998. Conclusions and recommendations from the PATH Weight of Evidence Workshop. ESSA Technologies Ltd. Vancouver, B.C.
- Connor, William, Howard L. Burge. 2003. The influence of flow and temperature on survival of wild subyearling fall chinook. *North American Journal of Fisheries Management*. Volume 23. Pages 362-375.
- Dawley, E.M., R.D. Ledgerwood, L.G. Gilbreath and P.J. Bentley. 1996. Relative survival of subyearling chinook salmon that have passed Bonneville Dam via the spillway, first or second powerhouse bypass system or turbines and tailrace. Information from studies. To Corps of Engineers, Portland District. Coastal Zone and Estuarine Studies Division. NMFS. Seattle, WA.
- 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. To Corps of Engineers, Portland District. Coastal Zone and Estuarine Studies Division. NMFS. Seattle, WA
- McMichael, G.A. and eleven coauthors. 2003. Subyearling chinook salmon stranding in the Hanford Reach of the Columbia River. Battelle-Pacific Northwest Division Report, PNWD-3308, 245 pp.
- Tiffan, K., D.W. Rondorf and P. G. Wagner. 2000. Physiological development and migratory behavior of subyearling fall chinook salmon in the Columbia River. *North American Journal of Fisheries Management*. 20:28-40.
- Williams, R.N and eleven co-authors. 1996. *Return to the River*. Restoration of Salmonid Fishes in the Columbia River Ecosystem. Northwest Power Planning Council Report 96-6. Portland, Oregon.

## Attachment 3

**Impact of the Amended Spill Proposal on Pacific Salmon Treaty Stakeholders**  
**Summary of Analysis**  
**June 14, 2004**

In 1999, after many years of negotiation, the U.S. and Canada reached a comprehensive agreement under the Pacific Salmon Treaty of 1985. Importantly, a coastwide abundance based management approach was adopted for ocean fisheries. Allowable harvest levels for Chinook ocean fisheries under this approach are based upon the aggregate abundance of stocks contributing to each fishery. Under this management system, harvest levels can increase as ocean survival and in-river salmon production and productivity increase. More importantly, as the survival of stocks contributing to a fishery decline, the allowable harvest level will decline as well.

Equally as important as the harvest management approach adopted by the Parties, the U.S. and Canada adopted an agreement to advance salmon habitat conservation and restoration efforts (Habitat and Restoration Agreement, Attachment E to the 1999 Agreement). Notable in this agreement was the Parties' recognition of the negative effect that poor passage conditions have on the production and productivity of salmon stocks. To address this problem, the U.S. and Canada agreed to "use their best efforts, consistent with applicable law, to . . . to promote safe passage of adult and juvenile salmon [and to] **maintain and, as needed, improve safe passage** of salmon to and from their natal streams." (Paragraph 1, Attachment E, emphasis added). The spill regime included in the biological opinion on the federal hydropower system, while not as beneficial as the tribes' comprehensive river management proposal, was at least a step in the right direction. The amended federal proposal before us now is a big step back from at least maintaining, and when possible improving, the possibility of juvenile outmigrants to pass safely through the killing fields of the hydropower system.

Under the treaty's harvest management approach, the more that a stock or stock group contributes to the stock aggregate in any fishery, the impact of changes in that stock's productivity (survival) will be greater on that fishery. Stocks that contribute heavily to any fishery are commonly called "driver" stocks. Upriver fall Chinook salmon stocks tend to be far north migrating and contribute heavily to ocean fisheries in Southeast Alaska (SEAK) and Northern British Columbia (NBC), making them driver stocks for those fisheries. Mid-Columbia summer Chinook salmon is a weak stock that is heavily impacted in these same fisheries as well.

CRITFC has completed an initial analysis of the effects on those ocean fisheries, as well as to the in-river fisheries, from the multi-year implementation of the proposed spill modifications. This analysis was completed using the Pacific Salmon Commission's Chinook model, which was developed and is maintained by the bilateral Chinook Technical Committee (CTC). The analysis was completed based upon input from a couple of other CTC members and was modeled by using a hindcasting approach; that is, assuming that the proposed reduction in spill was started in 1999 and then running the Chinook model forward from that year. This analysis will be reviewed by other CTC

members this week. The runs modeled use the following procedures and assumptions, as well as those noted on each spreadsheet:

- 1.) Potential reductions to ocean and in-river fisheries are presented as projected differences between what we saw in the past for fisheries when the stocks contributing to those fisheries benefited from higher survivals because spill was provided versus what would have happened to those stocks and fisheries without spill. We also modeled impacts using good water years (Chart 1) and bad water years (Chart 2), using the Chinook Technical Committee model (Calibration Run 0404).
- 2.) Current ocean conditions are assumed, using the CTC model (Calibration Run 0404).
- 3.) The effect of reduced spill on juvenile mortality is projected using SIMPAS, a hydropower model, to calculate downstream mortality on upriver salmon populations. The effects are computed by looking at base line differences in mortality due to spill and no-spill scenarios and the effect on the juvenile populations migrating in river in August. SIMPAS shows a 20% change in mortality from baseline for populations still in the river. Under average flow conditions, 21% of the outmigrating juvenile Upriver falls and mid-Columbia summer stocks are affected by 'no spill' operations in August. Under low flow conditions, 44% of the Upriver Falls and mid-Columbia summer Chinook stocks would be affected by the proposed change in hydropower operations. In addition, scenarios with and without delayed mortality effects are shown. Delayed mortality is modeled to be twice what SIMPAS demonstrates.
- 4.) Based upon populations impacted, a weighted survival function is computed for the overall population, which is then input into the CTC model. This is a function of the number of fish that might be impacted by the hydropower operations. Thus, if 100% of the population were unaffected by the hydropower operations, there would be no change in the observed EVs used in a model projection run. Conversely, if 100% of the populations were affected we would see a 20% reduction in the EVs. Since populations impacted vary between average and low water years, we computed 2 different weighted averages and computed a change in survival for the entire population. The survival differences are then multiplied with the 1998-2001 EVs from CTC model (Calibration Run 0404, TCChinook 04-03). Future EVs are computed as averages of those seen between 1998 and 2001 and a hind-casting exercise is undertaken.
- 5.) The change in juvenile survival/mortality caused by the proposed change in spill as captured in the modified EVs impacts the 1998 brood year, so the flow measure is first modeled for 1999 (impacting juveniles from the 1998 brood year). Only a minimal impact in ocean fisheries is detected in 2000 (as a small number of the 2 year old fish are above the legal size limit and are vulnerable to the fishery), with the first significant impact in ocean fisheries seen in 2001. The

harvest levels in the 2002, 2003 and 2004 ocean and in-river fisheries show an increasing level of impact as more and more age classes from all of the brood years impacted by a reduction in spill (brood years 1998-2002) show up in the fisheries. Note that in the hindcasting exercise the greatest impact is seen in 2004; that is, 5 years after spill reductions began, we see an overall decrease in abundance in these fisheries. In the real world case then, the cumulative or full impact on ocean and in-river fisheries from reductions in spill starting in 2004 will probably not be detected until 2008 or 2009, assuming that the proposed or similar spill reductions continue for each brood year through 2007.

The analysis captured in the attached charts provides a look at probable impacts in low flow and in average flow water years. The analysis also considers two scenarios: 1) inclusion of differential delayed mortality estimate from the amended federal SIMPASS impact analysis with spill curtailment and, 2) a doubling of delayed mortality as expressed from the amended federal SIMPASS impact analysis resulting from spill curtailment. These estimates are likely conservative because delayed mortality impacts from turbine and screen system passage routes could be reasonably expected to be 4-5 times higher than the above assumed rates based upon the Bonneville Survival Study (Gilbreath et al. 1993) and Snake River PIT-Tag return data. Further, we would anticipate greater losses if a reduced spill program was implemented over a longer time frame. Nor do these escapement estimates take into account protection of biodiversity selection against the portion of the later run components that contributes greater adult returns and larger fish to the spawning grounds and ocean and in-river harvest.

Considering the very minimum probable impacts, in average water years the federal proposal is estimated to reduce landed catch levels in Southeast Alaska (SEAK) all gear fisheries by almost 2%, in the Northern British Columbia (NBC) troll and sport fisheries by almost 1.5%, and Columbia river fisheries by at least 3%. Coastwide, this means a cultural and economic loss of about 14,000 salmon to the tribes' and to small coastal and in-river communities.

In low flow years, the losses are estimated to increase to at least 2.5% for SEAK fisheries, to 2.5% for NBC fisheries, and to 5% for Columbia River fisheries. Coastwide, this means a cultural and economic loss of about 22,500 salmon to the tribes' and to small coastal and in-river communities.

So, contrary to the promise of the 1999 Agreement under the Pacific Salmon Treaty, the amended proposal to reduce spill prevents us from working together to provide safe passage for salmon. In addition, tribal and non-tribal fishers in small in-river and coastal communities that depend upon healthy sustainable salmon runs are again being asked to take additional harvest reductions in order subsidize cheap hydropower. This is not equitable.

## AVERAGE FLOW YEAR AND NO DELAYED MORTALITY

**Assumptions used:**

- 1) Environmental Variables (EVs) for Upriver River Bright Fall Chinook (URBs) and mid-Columbia Summer Chinook were computed using SIMPASS values assuming avg river flow condition
- 2) 1998 to 2001 EV's were specified to equal the those obtained from Step 1 (2001-2004 were averages obtained from 1998-2001).
- 3) AIs were projected for 2001 to 2004 as these would be effected by 1998-2001 broods (age 3-6 for 1998 Brood)
- 4) We assume similar ocean conditions as calibration run in 2004

**NB: Please note that EVs are a factor of both freshwater and ocean conditions and only the juvenile passage survival parameter of freshwater conditions were modified in these model runs**

	Current AIs of 0404 for SEAK	Alaska AI withheld	Alaska AI with summer spill withheld	Present Allowable Catch	No Spill associated allowable catch	Current AIs for NBC	AIs with Aug spill withheld	Present Allowable catch for NBC	Spill reduced allowable catch for NBC	Projected Net Catch In river (fall) currently	Projected Net Catch In river (fall) with no spill
2001	1.19		1.19	204160	204160	1.26	1.25	164780	163300	132292	131105
2002	1.86		1.83	379696	373860	1.76	1.75	256760	255300	219769	216324
2003	2.17		2.13	439580	431860	1.90	1.87	277200	272820	137833	133628
2004	1.88		1.84	383548	375780	1.67	1.64	243620	239240	84259	81827

Average reduction of 1.8% in the AI for 2002 to 2005 with 1.8% reduction in allowable catch

1.4% decrease in NBC catch and AIs

2.5% decrease in terminal catch in fall fisheries with 3% decrease by 2004 (cumulative impacts).

**NB: 2004 has the highest decline due to cumulative impacts form multiple broods**

**Note: In absolute numbers this is a loss per year of 13875 Chinook in years of high abundance**

## AVERAGE FLOW YEAR AND DELAYED MORTALITY

**Assumptions used:**

- 1) Environmental Variables (EVs) for Upriver River Bright Fall Chinook (URBs) and mid-Columbia Summer Chinook were computed using SIMPASS values assuming avg river flow condition
- 2) 1998 to 2001 EV's were specified to equal the those obtained from Step 1 (2001-2004 were averages obtained from 1998-2001).
- 3) AIs were projected for 2001 to 2004 as these would be effected by 1998-2001 broods (age 3-6 for 1998 Brood)
- 4) Delayed Mortality is assumed to be double what SIMPAS predicts
- 5) We assume similar ocean conditions as calibration run in 2004

**NB: Please note that EVs are a factor of both freshwater and ocean conditions and only the juvenile passage survival parameter of freshwater conditions were modified in these model runs**

	Current AIs of 0404 for SEAK	Alaska AI withheld	Alaska AI with summer spill withheld	Present Allowable Catch	No Spill associated allowable catch	Current AIs for NBC	AIs with Aug spill withheld	Present Allowable catch for NBC	Spill reduced allowable catch for NBC	Projected Net Catch In river (fall) currently	Projected Net Catch In river (fall) with no spill
2001	1.19		1.19	204160	204160	1.26	1.25	164780	160367	132292	130149
2002	1.86		1.82	379696	371940	1.76	1.73	256760	252380	219769	213105
2003	2.17		2.11	439580	428020	1.90	1.85	277200	269900	137833	131242
2004	1.88		1.82	383548	371940	1.67	1.62	243620	236320	84259	79941

Average reduction of 2.5% in the AI for 2002 to 2004 with 2.5% reduction in allowable catch.

2.5% decrease in NBC catch and AIs

4.5% decrease in terminal catch in fall fisheries with 5% decrease by 2004 (cumulative impacts).

**NB: 2004 has the worst impacts due to cumulative effects from all 4 broods 1998-2001**

**Note: In absolute numbers this is a loss per year of 22492 Chinook in years of high abundance**

## LOW FLOW YEAR AND NO DELAYED MORTALITY

**Assumptions used:**

- 1) Current Environmental Variables (EV) for Upriver River Bright Fall Chinook (URBs) and Mid-Columbia Summer Chinook were computed using a weighted survival on populations obtained from SIMPASS with low flow conditions
- 2) 1998 to 2001 EVs were specified to equal the adjusted EVs from step 1. From 2001 onwards is an average of 1998-2001
- 3) AIs were projected for 2001 to 2004 as these would be effected by 1998-2001 broods (age 3-age6 1998 brood)
- 4) We assume similar ocean conditions as calibration run in 2004

**NB: Please note that EVs are a factor of both freshwater and ocean conditions and only the juvenile passage survival parameter of freshwater conditions were modified in these model runs**

	Current AIs of 0404 for SEAK	Alaska AI with summer spill withheld	Present Allowable Catch	No Spill associated allowable catch (SEAK)	Current AIs for NBC	AIs with Aug spill withheld	Present Allowable catch for NBC	Spill reduced allowable catch for NBC	Projected Net Catch In river (fall) currently	Projected Net Catch In river (fall) with no spill
2001	1.19	1.19	204160	204160	1.26	1.25	164780	160367	132292	130149
2002	1.86	1.82	379696	371940	1.76	1.73	256760	252380	219769	213105
2003	2.17	2.11	439580	428020	1.90	1.85	277200	269900	137833	131242
2004	1.88	1.82	383548	371940	1.67	1.62	243620	236320	84259	79941

Average reduction of 2.5% in the AI for 2002 to 2004 with 2.5% reduction in allowable catch.

2.5% decrease in NBC catch and AIs

4.5% decrease in terminal catch in fall fisheries with 5% decrease by 2004 (cumulative impacts).

**NB: 2004 has the worst impacts due to cumulative effects from all 4 broods 1998-2001**

**Note: In absolute numbers this is a loss per year of 22492 Chinook in years of high abundance**

## LOW FLOW YEAR AND DELAYED MORTALITY

**Assumptions used:**

- 1) Environmental Variables (EVs) for Upriver River Bright Fall Chinook (URBs) and mid-Columbia Summer Chinook were computed using SIMPASS values assuming avg river flow conditions
- 2) 1998 to 2001 EV's were specified to equal the those obtained from Step 1 (2001-2004 were averages obtained from 1998-2001).
- 3) AIs were projected for 2001 to 2004 as these would be effected by 1998-2001 broods (age 3-6 for 1998 Brood)
- 4) Delayed Mortality is assumed to be double what SIMPAS predicts
- 5) We assume similar ocean conditions as calibration run in 2004

**NB: Please note that EVs are a factor of both freshwater and ocean conditions and only the juvenile passage survival parameter of freshwater conditions were modified in these model runs**

	Current AIs of 0404 for SEAK	Alaska AI with summer spill withheld	Present Allowable Catch	No Spill associated allowable catch (SEAK)	Current AIs for NBC	AIs with Aug spill withheld	Present Allowable catch for NBC	Spill reduced allowable catch for NBC	Projected Net Catch In river (fall) currently	Projected Net Catch In river (fall) with no spill
2001	1.19	1.18	204160	201320	1.26	1.24	164780	161833	132292	128374
2002	1.86	1.78	379696	364220	1.76	1.71	256760	249460	219769	207017
2003	2.17	2.05	439580	416400	1.90	1.82	277200	265520	137833	126776
2004	1.88	1.78	383548	364220	1.67	1.60	243620	233400	84259	76469

Average reduction of 4.9% in the AI for 2002 to 2004 with 4.9% reduction in allowable catch.

3.9% decrease in NBC catch and AIs

7.7% decrease in terminal catch in fall fisheries with 10% decrease by 2004 (cumulative impacts).

**NB: 2004 has the worst impacts due to cumulative effects from all 4 broods 1998-2001**

**Note: In absolute numbers this is a loss per year of 39594 Chinook in years of high abundance**

## Attachment 4



## **Confederated Tribes of the Warm Springs Deschutes Fall Chinook Analysis**

Tribal staff analyzed the impacts of the amended spill proposal that curtails The Dalles and Bonneville Dam spill on August 1. BPA's high end estimate of 24,000 juveniles killed by the no August spill proposal was assumed then multiplied by the high and low end smolt- to- adult survival rate (SAR) estimates (4.05%) cited in page 10 of amended proposal. This results in a range of 120-960 adults lost. Using these figures and incorporating the Lower Deschutes Management Plan Escapement Goal: 2000 adults above Sherar's falls; 2000 adults below Sherar's fall (4,000 adults total) indicates that implementing the amended spill proposal would have triggered potential harvest restrictions in the Deschutes River during four of the last 27 yrs. (yellow highlights). It would have depressed further already low runs during 9 of the 27 yrs. (blue highlights). This analysis assumes that all of the adult losses occur during the same year, however, adults return at ages 3-5 therefore the impacts would be several years if spill was curtailed for only one year. However if the amended proposal was implemented over a fall chinook generation the impacts would be in the range of 120-960 adults lost per year.

Year	Run at Mouth	Above SHF Esc.	Harvest Rate	Run above SHF (no harvest)	120 Adults at 0.5 SAR Above SHF	960 Adults at 4% SAR Above SHF
1977	7492	3927	0.25	4909	4789	3949
1978	6125	3564	0.32	4704	4584	3744
1979	4883	2308	0.33	3070	2950	2110
1980	4493	2009	0.44	2893	2773	1933
1981	5020	2495	0.36	3393	3273	2433
1982	6906	3820	0.29	4928	4808	3968
1983	5165	3152	0.29	4066	3946	3106
1984	2995	1582	0.32	2088	1968	1128
1985	3452	1576	0.23	1938:	1818	978
1986	4954	3137	0.23	3859	3739	2899
1987	6154	3201	0.33	4257	4137	3297
1988	5751	2477	0.39	3443	3323	2483
1989	6479	1252	0.26	1578	1458	618
1990	3194	1101	0.31	1442	1322	482
1991	3686	983	0.42	1396	1276	436
1992	3813	670	0.01	677	557	-283
1993	8250	1035	0.01	1045	925	85
1994	5524	410	0.01	415	295	-545
1995	7624	1072	0.05	1126	1006	166
1996	8841	2328	0.09	2538	2418	1578
1997	20811	3764	0.06	3990	3870	3030
1998	11430	4094	0.04	4274	4154	3314
1999	6900	1888	0.05	1990	1870	1030
2000	4388	1876	0.09	2050	1930	1090
2001	12595	4272	0.03	4392	4272	3432
2002	15711	3940	0.08	4259	4139	3299
2003	19046	3884	0.09	4218	4098	3258

Years during which run was below management goal not triggered by spill proposal. However spill proposal would make low runs worse.

Years during which spill proposal would cause runs to decline below management goal levels.

