Amendment to the
2004/2004 – 2008 Implementation Plan
for the
FCRPS Biological Opinion Remand

U.S. Army Corps of Engineers
Bureau of Reclamation
Bonneville Power Administration

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I. Introduction

Operation and configuration of the Federal Columbia River Power System (FCRPS) provides multiple benefits to the Pacific Northwest, but can have adverse effects on several species of fish listed under the Endangered Species Act (ESA). The Action Agencies and NOAA Fisheries have conducted a series of ESA consultations to improve conditions for these fish beginning with the first listings in 1992. The most recent consultation was completed with the issuance of NOAA Fisheries' 2000 FCRPS Biological Opinion (2000 BiOp) which found that the proposed Federal action would jeopardize the continued existence of 8 of the 12 listed ESUs and included a Reasonable and Prudent Alternative (RPA) with 199 actions.

The 2000 BiOp allows flexibility for improving, clarifying and modifying the RPA actions as new information becomes available through research and species recovery efforts. This adaptive management process is conducted through annual, 1-year and 5-year implementation plans and progress reports, and allows the Action Agencies to update salmon and steelhead conservation measures and use resources efficiently. We have used adaptive management for the last three years to revise the initial RPA actions and improve survival as documented in annual implementation plans and progress reports. NOAA Fisheries evaluated and responded to these reports and approved changes to the RPA actions most recently in their *2003 Implementation Progress Evaluation Report* of December 23, 2003 (IPER). Although many actions have been completed, the on-going and in-progress actions are carried forward in this amendment to the *2004/2004 – 2008 Implementation Plan*.

In June 2003, a U.S. Federal District Court found deficiencies in the 2000 BiOp (National Wildlife Federation vs. National Marine Fisheries Service). The court found that NOAA Fisheries improperly relied on Federal actions that had not undergone ESA consultation or non-federal actions that were not demonstrated to be "reasonably certain to occur." The court also found that the use of range-wide actions for "off-site mitigation" did not conform to the regulations for Sec. 7(a)(2) consultations. The court remanded, or sent back, the 2000 BiOp to NOAA Fisheries for revisions in 2004. In the meantime, the court left the 2000 BiOp in place and we continue to implement its requirements.

In November 2003, the Action Agencies submitted to NOAA Fisheries their most recent plan, the *2004/2004-2008 Implementation Plan*. That document updated previous versions submitted in 2002 and 2003. The most current description of the Federal action under the 2000 BiOp is the *2004/2004-2008 Implementation Plan* as amended by this report. The Action Agencies also prepared the *2003 Check-In Report*, a programmatic progress and check-in report for the first three years of implementation as required by the BiOp. NOAA Fisheries responded to that report with its IPER, which included recommendations that the Action Agencies are also addressing in this amendment to the *2004/2004-2008 Implementation Plan*.

A. Purpose of this Document

The *2004/2004-2008 Implementation Plan* indicated that the Action Agencies were evaluating the effectiveness of summer spill operations to determine whether similar biological benefits could be provided at less cost. This document amends the *2004/2004-2008 Implementation Plan* to include a modified summer spill program for 2004 for NOAA Fisheries' review and preparation of a findings letter.

B. Response to Recommendations in NOAA Fisheries' Implementation Progress Evaluation Report

The actions described here respond to the recommendations identified in NOAA's 2003 IPER, many of which involve federal and regional planning and coordination:

1. The Council has amended the schedule for public comment on subbasin plans in order to address the concern that they provide an adequate response period for subbasin plans to be modified in response to technical review while maintaining their published schedule for completion (submittal of subbasin plans in May, 2004 and Council adoption of approved plans December, 2004 and January, 2005). Provision has been made to maintain funding support to allow state subbasin planning coordinators to respond to technical review working closely with Council staff. The Council will work to ensure periodic updates for subbasin plans, and BPA will continue to discuss support of this effort.

2. With respect to **future hatchery reforms** to benefit listed fish, BPA is currently funding hatchery genetic management plans for all federal hatchery facilities. As these plans are completed and approved, and ESA reforms are identified by NOAA Fisheries, the Action Agencies will work with NOAA and others to develop multi-agency implementation plans for ESA-related reforms approved in HGMPs for Reclamation, Corps and BPA funded federal hatcheries that will identify funding plans, priorities, and timetables for implementation. Other federal and regional agencies are also expected to contribute to this overall effort. Hatchery reform projects for federal hatcheries may be funded through appropriations, BPA direct funding agreements with the Corps, Reclamation and USFWS for certain hatcheries' operations and maintenance, or may proceed through the Council's Fish and Wildlife Program as appropriate.

3. The Action Agencies will summarize the performance of their non-hydrosystem (off-set) initiatives in their annual progress reports as recommended.

4. With respect to **future research, monitoring, and evaluation** for listed fish affected by FCRPS operations and mitigation, the Action Agencies will continue to use the federal RM&E Plan to identify studies and evaluations for funding. These projects will generally be prioritized and funded through the Corps' Anadromous Fish Evaluation Program, Reclamation's research, monitoring and evaluation initiatives and the Council's Fish and Wildlife Program. Other federal and regional agencies are also expected to contribute to this overall effort.

5. Data management remains a key element of evaluating BiOp implementation. The Action Agencies have been intensively involved in advancing the development of Pacific Northwest Aquatic Monitoring Partnership (PNAMP) together with NOAA Fisheries and state and tribal entities in the basin. We intend to continue these efforts to support a regional data management system to allow cooperative sharing of data by each of these entities.

With these and other actions underway, the future should show additional improvements for ESA salmon and steelhead. Many actions implemented since the inception of the Council's Fish and Wildlife Program and ESA BiOps, such as hydrosystem and habitat improvements, are only now beginning to contribute to increased production of natural origin fish. This is particularly the case for the very recent actions implemented under the 2000 BiOp. As hydrosystem and watershed-wide initiatives are undertaken and adaptively managed, further gains in fish populations can be expected. Additionally, like compound

interest, the strength of rebuilding should be enhanced as the numbers of fish rebound from relatively low levels.

II. Amendment to the 2004/2004 – 2008 Implementation Plan

A. Systemwide Summer Spill Operations

Hydrosystem operations proposed in the 2000 BiOp were based on the best information then available. Fish passage research since the BiOp was issued has been extensive, and a number of the BiOp operations have been altered to increase juvenile and/or adult passage survival rates. At times the new operations also reduced operational costs. The Action Agencies plan to continue evaluating the fish passage and cost effectiveness of fish operations and expect to recommend additional improvements to juvenile or adult passage operations when opportunities arise that allow for providing equal or greater biological benefits at less cost. Consequently, in the *2004/2004 – 2008 Implementation Plan*, the Action Agencies indicated a variety of operational and configuration changes to BiOp recommendations under consideration that had potential to achieve greater cost effectiveness while meeting performance standards including systemwide summer spill operations.

Last year's Mainstem Amendments to the Council's Fish and Wildlife Program, developed pursuant to the Northwest Power Act, recommend that the Action Agencies evaluate the effectiveness of summer spill and assess whether similar benefits can be provided at less cost. In response, on August 26, 2003, the regional executives of NOAA Fisheries, the Corps, and BPA issued a joint statement specifying "…that they have a responsibility to the region to devise an approach that is less costly while maintaining the ability to achieve the biological objectives for salmon and steelhead, and will work with all interested parties in the region to accomplish this objective." Two regional efforts occurred in response to this policy-level direction. The Columbia Basin Fish and Wildlife Authority (CBFWA), in coordination with Council staff, led a multi-agency effort to develop options for summer spill evaluations, including study designs and an assessment of alternative mitigation actions that could provide similar or greater benefits than the current summer spill program. In addition, the Implementation Team (IT) and TMT of the Regional Implementation Forum reviewed historical summer migration data to consider its application to in-season management of the 2000 BiOp spill operations.

As noted above, the Action Agencies actively participated with other regional representatives in both of these efforts, went through an extensive regional review and comment process, and now propose to implement a spill program in 2004 that is responsive to the regional executives' and Council's policy guidance to achieve BiOp objectives at a reduced cost. The only ESA-listed fish that are affected by the proposal are Snake River fall Chinook salmon, which are the focus of the following discussion.

B. Regional Coordination

Extensive public coordination has occurred to support development of this summer spill proposal. Opportunities for public input were offered and comments received from state, tribal, and other entities. The following is a list of the dates of meetings, public postings of information, and comment periods that were offered to aid the development of this proposal:

> **August 5, 2003:** Special meeting of the Columbia River Regional Executives to discuss the state of Montana system operation request (SOR) to modify summer spill operations for Libby and Hungry Horse reservoirs. As a result of this meeting, the Regional Executives decided to maintain the hydrosystem operations envisioned in NOAA Fisheries 2000 FCRPS Biological

Opinion while continuing to explore modifications to summer spill operations based on potential implementation of less-costly measures that provide similar biological benefits for both listed and non-listed species.

September 2003 - January 2004: CBFWA sponsored Spill Committee met to develop spill proposal options with state, tribal, federal and Council staff members. A conceptual approach was developed for a system-wide study of spill and reach survival however it was determined that it was not feasible without considerably more work to develop the concept into a proposal. The logistical requirements were considered insurmountable in the foreseeable future due to an excessive cost estimate, test fish requirements that could not be met (more fish needed than could reasonably be expected in daily fish samples and inadequate facilities to handle the numbers that would be required), and the extended length of time that would be needed for the study to produce statistically sound results.

Mid-January, **2004**: Federal agencies release the results of an alternative spill evaluation and the offset approaches to cover estimated fish impacts for public review and comment.

Early February, 2004: The technical analyses of biological impacts and offsets was presented at Technical Management Team (TMT) and Implementation Team (IT) meetings. Oral comments from participants were received and recorded in the official meeting notes.

February 20, 2004: Close of comments. The agencies received a total of 95 comments plus about 65 identical form letters. Of the 95 individual comments, 74 supported a reduction in summer spill. Most of these were from utilities and ratepayers wanting cost effective salmon recovery efforts. The remaining letters expressed support for continuing the current summer spill program, cited policy issues or challenged technical aspects of the federal analysis. These included a detailed set of comments submitted jointly by state, tribal, and federal fisheries managers. Critics of the analyses primarily claimed that the agencies underestimated impacts of reducing summer spill and overestimated or miscalculated mitigation benefits.

March 1, 2004: Comments received were posted on www.salmonrecovery.gov.

March 30, 2004: The Corps and BPA, in consultation with NOAA Fisheries, proposed a modified summer spill regime for a three-year period and mitigation for potential effects on the Snake and Columbia rivers. The proposal included offsets to potential harm done to migrating juvenile fall chinook and a plan to evaluate the effectiveness of the spill reduction at individual projects. The federal agencies considered the comments received in February to develop aspects of the proposal, particularly the offset package. A number of the offset actions were dropped from consideration as a result of the comments while other actions received renewed consideration.

March 30 – April 7, 2004: The federal agencies sought and received written comments on the March 30 modified summer spill proposal. The federal agencies specifically requested input on a reasonable package of mitigation actions that could achieve the objective of providing similar or better biological benefits for salmon. The federal agencies continued to consult with tribal and state executives and key staff.

April 2, 2004: The Corps and BPA posted on www.salmonrecovery.gov their responses to comments received on the analysis of the biological impacts of alternative summer spill operations and assessments of the benefits of alternative mitigation actions or offsets.

April 19, 2004: The Corps and BPA post on www.salmonrecovery.gov the comments received on the March 30 modified summer spill proposal.

April 14 and 21, 2004: The BPA and Corps announce their intent to take more time to make a decision on summer spill.

June 8, 2004: The Corps and BPA, in consultation with NOAA Fisheries, provide an amended modified summer spill proposal for a one-year period and mitigation for potential effects on the Snake and Columbia rivers.

June 8 – June 14, 2004: The federal agencies seek additional comments on the amended summer spill proposal. This included meetings on June 14 with the Columbia Basin Tribes and later that day with the states, federal agencies, and other interested parties.

C. Proposed Amendment

The specific details of the proposed amendment and supporting documentation are included in Attachment A. In general, we propose to reduce summer spill with offsets to achieve similar or better fish survival levels to NOAA Fisheries 2000 BiOp. As the proposal notes, our final summer spill plan has been significantly scaled back from our preliminary proposal as a result of regional input. In particular, it is now a one-year proposal, rather than a three-year pilot, spill cutbacks are proposed mainly in August rather than July and August, and the amount of spill cutback has been reduced from about 55% of summer spill to about 36% (based on megawatt hours relative to full BiOp spill). Proposed mitigation actions (additional Snake River water and increased predator control) provide full offsets for ESA-listed fish. The proposal should result in a net savings after offsets of approximately $18-28 million.

Proposed Operation

July -- retain currently planned research coordinated through regional process:

- **Bonneville Dam** – evaluate survival benefits of the newly completed corner collector under two different spill conditions (BiOp spill and 50 kcfs spill, 24 hours) through July 31.
- **Ice Harbor Dam** – test two different spill operations through July 15 (BiOp spill and 45 kcfs spill, 24 hours), then revert to BiOp spill levels through July 31.

August -- spill reductions as follows:

- **Ice Harbor and John Day Dams** – continue BiOp spill through August 25, no spill August 26-31.
- **The Dalles and Bonneville Dams** – continue BiOp spill through July 31, no spill in August.

This operation is displayed in Table 1 below.

Table 1: Spill proposal for July and August 2004.

	BiOp Spill	**Proposed Operation**			
		July 1-15	**July 16-31**	**August 1-25**	**August 26-31**
Ice Harbor	45 kcfs day, 120% TDG night	Test [1]	BiOp spill		No spill
John Day	30% of river flow, 24 hrs	BiOp spill			No spill

The Dalles	40% of river flow, 24 hrs	BiOp spill	No spill
Bonneville	75 kcfs day, 120% TDG night	Test [2]	No spill

[1] Alternate BiOp spill and 45 kcfs spill, 24 hours
[2] Alternate BiOp spill and 50 kcfs spill, 24 hours

Among the options considered for the proposed operation included continuing BiOp spill at all four projects until some time in August and then stopping all spill. Because of the differential project survival, we determined that there would be less risk to fish to provide additional spill at Ice Harbor and John Day and stop spill at The Dalles and Bonneville in August. See Table 2.

Table 2. Comparison of passage parameters and resulting project survival estimates.

	Ice Harbor	**John Day**	**The Dalles**	**Bonneville**
Project Survival with Spill	95.91 %	89.16 %	91.83 %	97.50 %
Project Survival without Spill	94.35 %	77.76 %	87.15 %	95.00 %
Difference:	1.56 %	11.40 %	4.68 %	2.50 %
Pool Survival with Spill	83.10 %	71.00 %	89.50 %	81.50 %
Pool Survival without Spill	79.78 %	68.16 %	87.71 %	79.87 %
Difference:	3.32 %	2.84 %	1.79 %	1.63 %
Project and Pool Survival with Spill	79.70 %	63.30 %	82.19 %	79.46 %
Project and Pool Survival without Spill	75.27 %	53.00 %	76.44 %	75.88 %
Difference:	4.43 %	10.30 %	5.75 %	3.58 %
Survival Assumptions				
High-impact assumption of increased pool mortality without spill	4.00 %	4.00 %	2.00 %	2.00 %
Guidance Efficiency	48.60 %	28.80 %		25.20 %
Sluice/Surface Bypass Efficiency			35.00 %	46.00 %
Turbine Survival	89.00 %	72.00 %	84.00 %	94.00 %
Bypass Survival	100.00 %	92.00 %		98.00 %
Sluiceway or Surface Bypass Survival			93.00 %	98.00 %

Note: 1) There are more listed fish in the river to benefit by spill at Ice Harbor.
2) John Day causes about 2/3 of the impact to listed fish in the lower river due to the passage survival assumptions.

Expected Impacts to Fish

The proposed spill operation is expected to impact a range between 109 to 927 Endangered Species Act (ESA) listed juvenile fish, as shown in Table 3 below. This is equivalent to about 4 to 37 adult fish at a smolt-to-adult return rate of 4.0 %.

Table 3. Estimated impacts to Snake River fall Chinook salmon and estimated offsets.

Snake River Bright Fall Chinook	Estimated Number of Juveniles Migrating	Estimated Impacts of Proposed Operation	Offsets	
			Increased Predator Control	Brownlee Flow Augmentation
Juveniles	1,615,384	109 to 927	271 to 597	719 to 1,077
Adult conversion (0.5 % SAR)		1 to 5	1 to 3	4 to 5
Adult conversion (1.0 % SAR)		1 to 9	3 to 6	7 to 11
Adult conversion (2.0 % SAR)		2 to 19	5 to 12	14 to 22
Adult conversion (4.0 % SAR)		4 to 37	11 to 24	29 to 43

Note: Estimated impacts and offsets are also considered in the proposal (Attachment A).

Proposed Offsets to Mitigate Expected Impacts

Increased flows of 100,000 acre-feet will be provided from Brownlee reservoir in July (approximately July 7-28), are expected to fully mitigate impacts to Snake River fall chinook (Table 3). Increased control of northern pikeminnow has also been implemented and it is expected to provide additional benefits for listed salmon. These benefits were not counted in this proposal for determining that the level of offsets would fully mitigate for the impacts from reduced spill.

III. Conclusion

The Action Agencies have developed the proposed action in our amended implementation plan to meet our Sec. 7(a)(2) obligations for listed salmon and steelhead under the ESA. We will continue to use annual implementation plans to focus our efforts on those actions that avoid jeopardy to listed species and do so in the most cost effective means available. We will also focus on improving the certainty that those actions will be accomplished.

In 2005 and beyond, we will be considering whether to continue this summer spill change. We will be looking at site specific juvenile fish passage monitoring as well as the success of our offset actions.

We also have responsibilities under the Northwest Power Act, and many actions overlap with actions to meet those obligations. To accomplish all that we need to do, we must plan and coordinate not only with NOAA Fisheries, but also the Council, affected tribes, and other regional parties. Without working together, success is impossible. Fortunately, many forums are well established in the region. We will continue to be part of these forums as the region works together to protect and recover fish and wildlife.