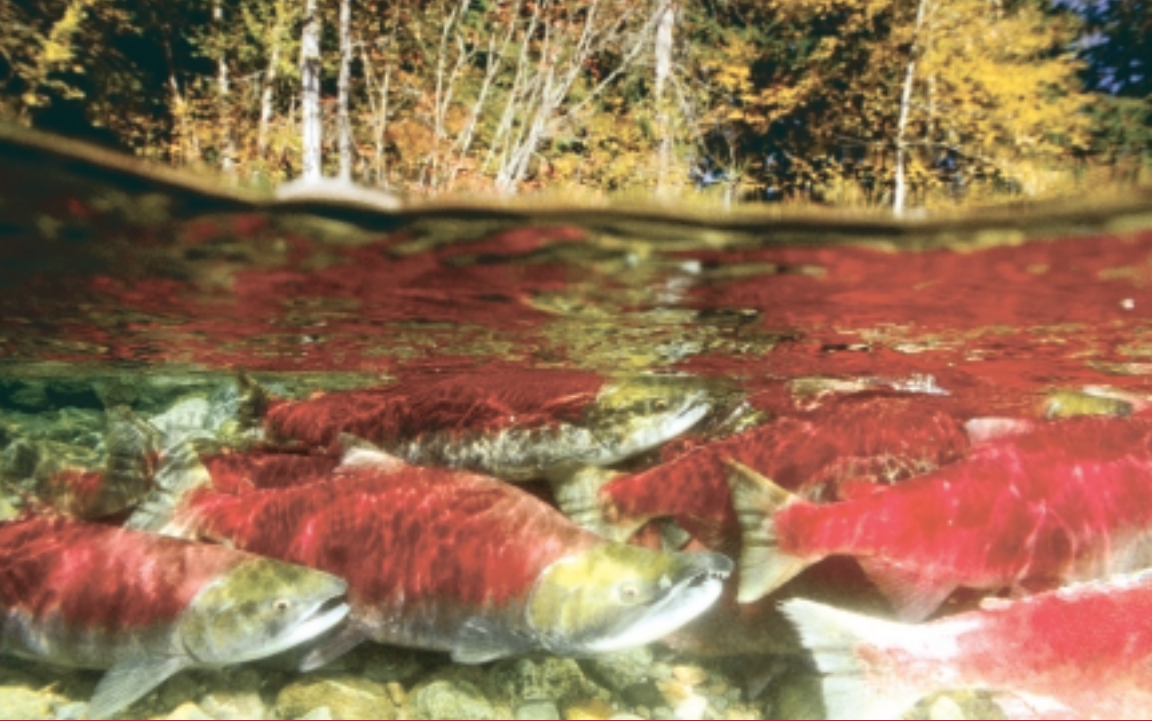


Salmon Plan Report Card



The Federal Plan to Restore Salmon and Steelhead
in the Columbia & Snake River Basin: Year Two



YEAR 2



2001 **2002** 2003 2004 2005


Introduction

In 2000, the federal government released its plan — the Salmon Plan — to protect and restore imperiled Columbia and Snake River salmon and steelhead. Although the Salmon Plan admits that partially removing the four federal dams on the lower Snake River in eastern Washington is the best way to restore salmon in these rivers, the federal government chose instead to adopt an “everything but dam removal” approach. The Plan (also known as the 2000 Biological Opinion for the federal dams) sets out 199 measures that the federal government must undertake to save salmon and steelhead without partially removing the four lower Snake River dams. This study examines the progress made to date on implementing these measures during the first two years of this ten-year plan.

The verdict for 2002, like 2001, is grave; the federal government implemented less than 30% of the measures called for in the Salmon Plan. Though the Northwest experienced near-normal water conditions in 2002 (unlike the 2001 drought conditions) the federal government still failed to implement the vast majority of the Salmon Plan’s measures. The failure begun in 2001 continued in 2002.

The federal government’s efforts have earned it a failing grade — an “F” — for the second year in a row. Some prime examples of why the federal government received this grade include:

-  The lower Snake River dams continue to raise river water temperatures, causing river temperatures to reach as high as 78° F;
-  The necessary water flow called for by the Plan to assist migrating salmon rarely materialized; and

 The Administration neither asked for nor received the funding or the authorizations necessary to achieve the measures called for in the Plan.

The Salmon Plan contains three check-in points — in 2003, 2005, and 2008 — to assess progress in implementing the Plan, and whether it is indeed protecting and restoring salmon. If the Plan is failing, the federal government must opt for stronger measures. The first check-in



comes in September 2003 and is specifically designed to answer two questions: (1) did the federal government ask for and receive the funding and authorizations necessary to implement the Plan’s measures; and (2) did the federal government implement the measures that it said it needed to complete by 2003.

The first check-in is close at hand. This report and its predecessor document an unambiguous federal failure to implement and fund this Plan. It will be difficult for the federal government to make up for so much delinquency and to answer these questions with anything but a simple “no.”

Salmon from these rivers saved the Lewis and Clark expedition from starvation 200 years ago. It now falls on us to return that gift; to restore salmon for future generations; to protect the communities and cultures that have relied upon salmon for generations; to honor our laws and treaties with the native peoples of the region; and to restore the health of our waters. In September 2003, we must expect more of our government, and ask more of ourselves, than failure.

Salmon Plan Report Card



Clean Water Improvements

Salmon and steelhead need clean, cool water to survive. Dams increase gas levels in the river and create hot pools of water, both of which can be lethal to salmon. In 2002, the federal government completed less than 15% of the measures required to provide clean water. Temperatures in the Snake River reached as high as 78° F, 10° higher than is safe for salmon.

F



Surviving the Dams

Most salmon and steelhead in the Columbia and Snake rivers must pass through a series of dams. Each federal dam kills up to 15% of the salmon that pass it and some salmon must make it past eight federal dams. In 2002, the federal government completed only 31% of the measures in the Salmon Plan to increase passage at the federal dams, up from 30% completed in 2001. This slight improvement was largely due to a near-average water year, yet the federal government was still unable to make significant progress in improving dam survival.

D



Spawning & Rearing Habitat Improvements

Instead of partially removing the four lower Snake River dams, the Salmon Plan relies heavily on improving spawning and rearing habitats not already inundated by the federal dams. In 2002, the federal government completed only 25% of the habitat measures required by the Salmon Plan. The federal government is far behind on measures it bills as a cornerstone of the Plan.

F



Hatcheries & Harvest Changes

The Salmon Plan sets forth changes to current salmon harvest practices and plans to reform current fish hatchery practices. Much like 2001, the federal government's progress here was extremely limited, completing only 6% of the required measures.

F



Studies & Reporting

Rather than improving actual conditions for salmon and steelhead, so far the federal government does its best work planning and designing studies, and reporting on those efforts. In 2002, the federal government completed 40% of the studies and reporting measures required in the Salmon Plan.

C



Funding

Adequate funding for the Salmon Plan is necessary to implement the measures required in it. In 2002, the Bush Administration failed even to ask for more than about 50% of the nearly \$900 million/year needed to implement the Plan.

F

Overall Grade

After failing four of six subjects and completing less than 30% of the measures requiring action in 2002, the federal government is far behind schedule and is unlikely to be able to claim success at the upcoming check-in in September 2003.

F

Salmon Plan Measure

Clean Water Improvements

F

Fail=7 • Incomplete=5 • Pass=2

Maintain Water Temperature at Lower Granite Dam at or Below 68° F	(RPA Action 19)	-
Repairs at Dworshak Hatchery for Temperature Improvement	(RPA Action 33)	+
Water Quality Monitoring Plan for Irrigation Projects	(RPA Action 39)	-
Total Dissolved Gas Study	(RPA Action 130)	+
Monitor Effects of Total Dissolved Gas	(RPA Action 131)	≠
Plan for Evaluating Gas Monitoring System	(RPA Action 132)	-
Complete Gas Model & Use by 2001	(RPA Action 133)	-
Spillway Deflector Optimization Program	(RPA Action 134)	≠
Divider Walls Design Development	(RPA Action 135)	≠
Spillway Deflectors at Chief Joseph Dam	(RPA Action 136)	-
Gas Abatement Options for Libby Dam	(RPA Action 137)	≠
Safe Passage Technologies (Removable Spillway Weirs) at Dams	(RPA Action 138)	≠
McNary Dam Temperature Controls	(RPA Action 142)	-
Plan to Model Water Temperature Effects of Federal Dams	(RPA Action 143)	-

Surviving the Dams

D

Fail=18 • Incomplete=16 • Pass=15

Meeting River Flow Objectives	(RPA Action 14)	-
Coordination of Flow & Spill Operations	(RPA Action 17)	-
Operation of Upper Snake & Columbia River Dam Reservoirs	(RPA Action 18)	-
Flood Control Levels	(RPA Action 19)	-
Operation of the Lower Snake River & John Day Dam Reservoirs	(RPA Action 20)	+
Flood Control Shifts in Upper Snake & Columbia	(RPA Action 21)	+
Flood Control Changes	(RPA Action 22)	-
Banks Lake Operation	(RPA Action 23)	-
Canadian Treaty for Water Storage	(RPA Action 24)	≠
Additional Non-Treaty Water from Canada	(RPA Actions 25, 26)	≠
Banks Lake Operations to Increase Flow	(RPA Action 31)	-
Flood Control Study	(RPA Action 35)	-
Revised Storage for Libby Dam	(RPA Action 36)	-
Salmon Trucking & Barging at Snake River Dams During Low Flow Years	(RPA Action 40)	-
Spilling Water over McNary Dam	(RPA Action 41)	+
Maximize Trucking & Barging of Salmon & Steelhead During Summer Migration	(RPA Action 42)	+
Limited Trucking & Barging of Fall Chinook at McNary Dam	(RPA Action 43)	+
Decrease Trucking of Salmon & Steelhead in Snake River	(RPA Action 44)	+
Evaluate & Implement Improvements at Collector Dams	(RPA Action 53)	+
Annual Spill Program	(RPA Action 54)	+
Continue Planning & Design on Schultz-Hanford Transmission Line	(RPA Action 55)	+
Continue Planning & Design on Joint Transmission Project to Upgrade West-of-Hatwai Cutplane	(RPA Action 56)	+
Turbine Operations Optimal for Salmon	(RPA Action 58)	-
Turbine Adjustments to Improve Juvenile Salmon Survival	(RPA Action 59)	≠
Adult Fallback & Young Salmon Survival Study at Bonneville Dam	(RPA Action 60)	+
Study Prototype Powerhouse at Bonneville Dam in 2001	(RPA Action 61)	≠
Improvements at Bonneville Dam's First & Second Powerhouse	(RPA Actions 62, 63, 65)	≠

“Fully implementing the proposed actions would require a le

Progress at a Glance

KEY

Fail: -

Incomplete: ≠

Pass: +

Investigation of Minimum Gap Runners at Bonneville Dam's First Powerhouse	(RPA Action 64)	≠
Spill & Passage Survival Studies at The Dalles Dam	(RPA Action 68)	≠
Testing of Occlusion Devices at The Dalles Dam	(RPA Action 69)	≠
Twenty-Four Hour Spill at John Day Dam	(RPA Action 71)	-
Develop Safe Passage Technology at John Day & Lower Monumental Dams	(RPA Actions 72, 98, 99)	-
New Fish Protection Screens at John Day	(RPA Action 73)	≠
Continue Design Development for Safe Passage at Lower Granite Dam	(RPA Action 80)	≠
Turbine Passage Survival Study	(RPA Action 89)	-
Develop Comparison of Survival Benefits of By-Pass Facilities at Bonneville Dam's First Powerhouse	(RPA Action 97)	-
Adult Salmon Protections at Columbia and Snake River Dams	(RPA Actions 111, 113)	≠
Report on Adult Fishway at Bonneville Dam by 2001	(RPA Action 126)	+
Investigation of Bonneville Dam Adult Fishway to Ensure Its Operation	(RPA Action 127)	+
Maintain Juvenile & Adult Fish Facilities	(RPA Action 144)	≠
Maintenance Programs	(RPA Action 145)	+
Removal & Prevention of Debris from Fish Passage Facilities	(RPA Action 146)	+
Develop Recovery Goals	(RPA Action 179)	-

Spawning & Rearing Habitat Improvements

F

Fail=9 • Incomplete=3 • Pass=4

Flows to Support Chum Salmon Spawning in Ives Island	(RPA Action 15)	-
Access for Chum Salmon Spawning in Hamilton & Hardy Creeks	(RPA Action 16)	+
Reduce Stream Flow Depletions	(RPA Action 27)	+
Illegal Stream Withdrawals	(RPA Action 29)	-
Study & Improve Irrigation Project Impacts on Salmon Recovery	(RPA Action 30)	≠
Acquiring Upper Snake River Water for Flows	(RPA Action 32)	-
Fish Screens at Burbank Irrigation Project	(RPA Action 38)	-
Bureau of Reclamation Priority Subbasins	(RPA Action 149)	-
Bonneville Power Administration Funding of Productive Non-Federal Habitat	(RPA Action 150)	-
Develop Methods for Improving Tributary Water Flows	(RPA Action 151)	-
Protect 100 Miles of Riparian Habitat	(RPA Action 153)	≠
Subbasin Assessments & Plans	(RPA Action 154)	-
Columbia and Snake River Habitat Improvements	(RPA Action 155)	-
Feasibility Study to Improve Chum Salmon Spawning Conditions at Ives Island	(RPA Action 156)	+
Habitat Restoration for Columbia River Chum Salmon	(RPA Action 157)	+
Develop Estuary Habitat Compliance Monitoring Program	(RPA Action 163)	≠

Hatcheries & Harvest

F

Fail=10 • Incomplete=5 • Pass=1

Development of Selective Fishing Methods & Gear	(RPA Action 164)	+
Improving Fishery Management Systems	(RPA Actions 165-167)	-
Crediting Harvest Reform Measures	(RPA Action 168)	-
Reforming Existing Hatcheries	(RPA Actions 169-173)	≠
Comprehensive Hatchery Fish Marking Program	(RPA Action 174)	-
Safety-Net Artificial Production Programs (SNAPP)	(RPA Actions 175-178)	-
Hatchery Reform Studies	(RPA Action 184)	-

level of cooperation that has never before been achieved..."

Independent Scientific Advisory Board,
A Review of Salmon Recovery Strategies for the Columbia River Basin

Studies & Reporting

C

Fail=13 • Incomplete=15 • Pass=19

One & Five-Year Implementation Plans	(RPA Action 1)	—
One & Five-Year Plans for Dam Improvements	(RPA Action 2)	≠
One & Five-Year Water Management Plans for Federal Dams	(RPA Action 3)	—
One & Five-Year Capital Investment Plans	(RPA Action 4)	—
One & Five-Year Water Quality Plans	(RPA Action 5)	—
One & Five-Year Operation & Maintenance (O&M) Plans	(RPA Action 6)	—
One & Five-Year Habitat Plans for Offsite Mitigation	(RPA Action 7)	+
One & Five-Year Hatchery & Harvest Plans	(RPA Action 8)	+
One & Five-Year Research, Monitoring & Evaluation Plans	(RPA Action 9)	+
Recovery Planning	(RPA Action 10)	≠
Unanticipated Actions	(RPA Action 11)	—
Approval of Plans	(RPA Action 12)	—
Annual Reports on Achieving Performance Standards	(RPA Action 13)	—
Study Plan for Evaluating Trucking & Barging at McNary Dam	(RPA Action 45)	+
Study on Trucking & Barging Snake River Chinook & Steelhead	(RPA Action 46)	+
Evaluation of Delayed Mortality between Transported & In-River Salmon	(RPA Action 47)	≠
Survival Studies for Transported Fish	(RPA Action 49)	+
Install & Investigate Salmon Detectors & New Technologies	(RPA Actions 50, 192, 193)	+
Optimizing In-River Passage	(RPA Action 51)	≠
Identify & Implement Improvements to Trucking & Barging	(RPA Action 52)	≠
Predation Study at Little Goose Dam	(RPA Action 79)	+
Study of Young Salmon Passing over Dams	(RPA Action 82)	+
Study the Effect of Spill Volume & Duration on Salmon	(RPA Action 83)	≠
Changes to Limit Pit-Tag Effects on Salmon	(RPA Action 87)	≠
Implement & Study Methods to Reduce Salmon Deaths Due to Predation in Lower Columbia and Snake Rivers	(RPA Action 100)	≠
Discourage Avian Predation from Dams	(RPA Action 101)	+
Studies on Avian Predation above Bonneville Dam	(RPA Action 102)	≠
Predation by White Pelicans at McNary Dam	(RPA Action 103)	+
Assess Downstream Migration of Adult Steelhead (Kelt)	(RPA Action 109)	+
Adult Counting Station Rehabilitation Studies	(RPA Action 117)	+
Prespawning Adult Fish Mortality Studies	(RPA Action 118)	+
Monitoring Program	(RPA Action 180)	—
Satellite Imagery of Columbia Basin	(RPA Action 181)	—
Hatchery vs. Wild Reproductive Studies	(RPA Action 182)	—
Effectiveness Monitoring Studies	(RPA Action 183)	—
Tagging & Recapturing Studies	(RPA Action 185)	≠
Delayed Mortality below Bonneville Dam	(RPA Actions 186, 195)	≠
Transportation Effects on Ocean Entry	(RPA Action 187)	+
Lower River Salmon Tagging & Study	(RPA Action 188)	≠
Calculating the Rate of Adult Salmon Returns for Different Passage Options	(RPA Action 189)	+
Studies on Early Life History of Snake River Fall Chinook	(RPA Action 190)	+
Continue & Improve Adult Salmon & Steelhead Counting Programs at Federal Dams	(RPA Action 191)	≠
Develop Common Data Management & Monitoring Systems	(RPA Action 198)	—
Anticipated Research & Monitoring Actions/ESA Authorization	(RPA Action 199)	≠

Funding

F

Fail=9 • Incomplete=0 • Pass=0

Estuary Protection & Funding	(RPA Actions 158-162, 194, 196, 197)	—
General Funding	(All RPA Actions)	—

OVERALL SCORE

Fail=66 • Incomplete=44 • Pass=41

F

Explanation of Grades

The Salmon Plan is a ten-year plan that sets forth 199 measures necessary to ensure the survival and recovery of threatened and endangered salmon and steelhead. The Salmon Plan does not require activity on all 199 measures in the first two years. (These measures are called “Reasonable and Prudent Alternative Actions” or RPA Actions below.) Instead, it sets forth measures and deadlines that range from 2001 through 2010 and beyond.

This report only addresses those measures that had some relevance in 2001 and 2002. That is, the Salmon Plan required that something happen in the last two years with regard to the specific measure. Consequently, only 150 measures and the funding needed to implement these measures were graded. These 150 measures and their funding were then grouped into six categories or “subjects.”

For purposes of grading the federal government’s implementation, each of the 150 measures were graded with a “Fail,” “Incomplete,” or “Pass” grade. Each category was then given a grade based on the number of fails, incompletes, or passes that fell into that category. The federal government was given the benefit of the doubt in the overall grading process. The terms “Fail,” “Incomplete,” and “Pass” are defined as follows:

Fail = A “Fail” means that the federal government did not meet, or was significantly off of, the deadlines set forth in the Salmon Plan. A “Fail” can also mean that the federal government began some of the work but failed to complete a significant portion of the required measure.

Incomplete = An “Incomplete” means that the federal government did most, but not all of the work required for a specific measure. An “Incomplete” also includes measures where it was unclear how much work the federal government has completed because it did not follow the process set forth in the Salmon Plan.

Pass = A “Pass” means that the federal government completed, or was significantly on track to complete, a specific measure as required in the Salmon Plan. Thus, a “Pass” does not necessarily mean that the federal government has successfully completed the measure. Instead, a “Pass” may mean that a reasonable certainty exists that the measure will be completed on or near its deadline.



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Salmon and steelhead need waters no hotter than 68°F to survive. The Lower Snake River reached 78°F in 2002.



Clean Water Improvements

Number of Actions Graded: 14

Fail=7 • Incomplete=5 • Pass=2

Maintain Water Temperature at Lower Granite Dam at or Below 68° F.

Water temperatures reaching 68° F become potentially deadly for salmon and steelhead. Water in deeper storage reservoirs, like Dworshak Dam, stratifies with colder water found at deeper depths. By releasing deeper, colder water, temperatures in the Snake River can be lowered toward non-deadly temperatures. Water temperatures in the Lower Granite Dam reservoir forebay were greater than 68° F for about 60% of the time between June 30, 2002 and September 1, 2002, with temperatures reaching as high as 78° F. **(RPA Action 19) FAIL**

Repairs at Dworshak Hatchery for Temperature Improvement. The Salmon Plan directs the Army Corps of Engineers (Corps) to design and implement repairs and modifications at the Dworshak Hatchery that allow for

both effective hatchery operations and reduced temperatures in the lower Snake River. Currently, the Corps stresses that the Dworshak Hatchery limits its ability to release water from Dworshak Dam to help meet water temperature standards in the lower Snake River. If the dam is operated to lower water temperatures in the Snake River, the hatchery receives water that is too cold for raising fish. The agency has begun the necessary repair work and is likely to complete it in February of 2003. **(RPA Action 33) PASS**

Water Quality Monitoring Plan for Irrigation Projects.

The Salmon Plan required the Bureau of Reclamation (BOR), in consultation with the National Marine Fisheries Service (NMFS), to have developed a detailed water quality monitoring plan by June 1, 2001. The purpose of the water quality plan is to evaluate the impacts of the reduced water quality coming from irrigation projects into the Columbia River. Because of the potential for adverse effects on listed salmon and steelhead, detailed water quality monitoring and analyses are needed to define these water quality impacts. The agencies disagree on what parameters should be addressed and where and

when the monitoring should be implemented. BOR is collecting information on a quarterly basis to help address this question. However, the plan is still not completed. **(RPA Action 39) FAIL**

Total Dissolved Gas Study. When water spills over dams, it pushes oxygen and nitrogen gases into the river. Too high a concentration of these gases can harm salmon and other aquatic life. As a result, the Salmon Plan requires the Corps to study methods for reducing the amount of gas produced by the dams. The Salmon Plan required the Corps to complete this study by April 2001. The Corps completed this plan in September 2001. **(RPA Action 130) PASS**

Monitor Effects of Total Dissolved Gas. Due to the impacts of high levels of Total Dissolved Gas (see RPA Action 130) on salmon, the Salmon Plan requires the federal government to monitor the effects of the gas on salmon on an annual basis. This monitoring is to be developed and implemented in consultation with the Water Quality Team, a team of federal, state, and tribal biologists. The Salmon Plan sets forth minimum physical and biological monitoring components and requires an annual review of gas impacts. The Corps maintains a system that monitors the gas levels at specified areas in the Columbia and Snake rivers. The fishery agencies and tribes also monitor the impacts on salmon at specified areas. Unlike 2001, in 2002, the Water Quality Team did review the gas impacts. However, the 2002 data has not yet been evaluated in order to make changes for the 2003 migration. **(RPA Action 131) INCOMPLETE**

Plan for Evaluating Gas Monitoring System. NMFS believes that the location of some of the gas monitoring stations may not be optimal for understanding the real gas levels in the river. As a result, the Salmon Plan requires the federal government to craft a plan to evaluate and make any needed changes to the location of gas monitoring stations. This plan was to be completed by February 2001 and included as part of the first annual water quality improvement plan. Additionally, some changes were to be incorporated by the 2001 spill season. Field studies were conducted at some monitoring sites in 2002. However, due to limited spill in 2001, a final plan has yet to be completed. Recommendations from the Water Quality Team have been submitted for completion and the federal government now says that a plan will be completed in 2003. **(RPA Action 132) FAIL**

Complete Gas Model & Use by 2001. As part of the Corps' gas study (see RPA Action 130), the Salmon Plan required the Corps to create a gas model to be used as a tool in the spring 2001 migration period. The application and results of the model are to be coordinated through the Water Quality Team. The Corps completed several models but none have been used. The federal government hopes to be able to use one of these models in 2003. **(RPA Action 133) FAIL**

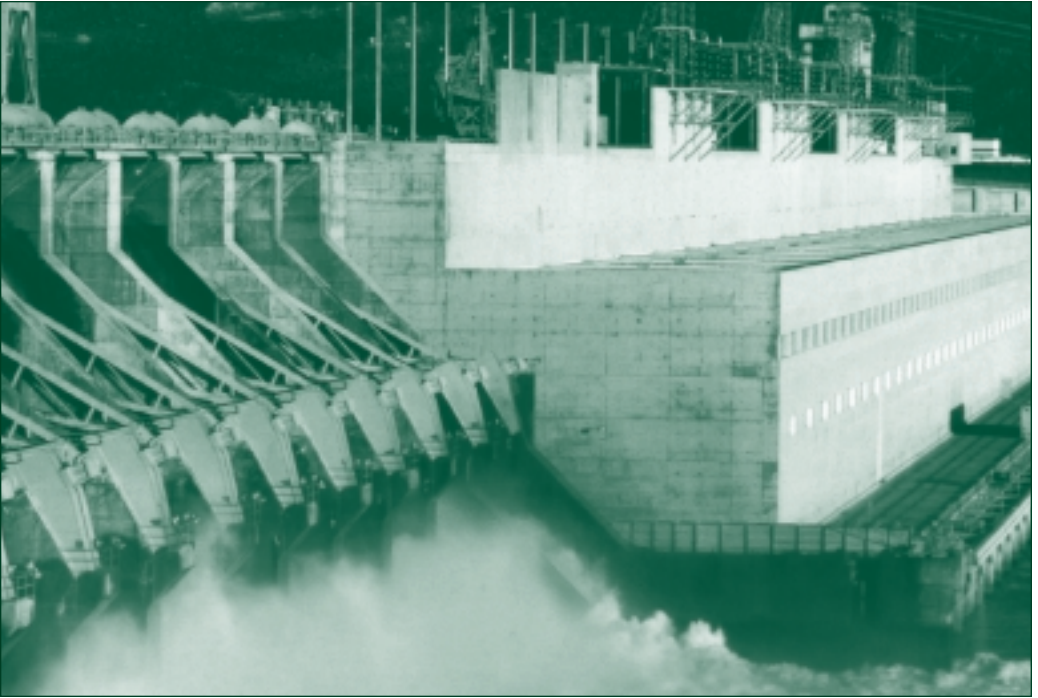
Spillway Deflector Optimization Program. The Corps currently has a spillway deflector optimizer program. Spillway deflectors are devices that are placed on dams to help minimize the levels of gas trapped in the river when water plunges over the dams. New deflectors at several dams in the lower Columbia and Snake rivers reduce gas levels in some areas. However, other dams, such as Little Goose and Chief Joseph dams, continue to be bottlenecks in the system by limiting the amount of spill the federal government and private dams can provide for young salmon migrating downstream. The Corps hopes to complete this program by the end of 2003. **(RPA Action 134) INCOMPLETE**

Divider Walls Design Development. When a good deal of water is spilled over a dam to assist salmon migration, water that could go through the turbines will go through the spillways instead. As a result higher levels of trapped gas move into the river below the dam, causing elevated gas levels. The Salmon Plan requires the Corps to evaluate whether the placement of divider walls below the dam would limit this impact and thus allow for greater volumes of water to be spilled over the dams for salmon. The Corps and other federal agencies are still investigating these mechanisms. No significant progress has been made to date and NMFS has raised questions as to their efficacy. **(RPA Action 135) INCOMPLETE**

Spillway Deflectors at Chief Joseph Dam. In order to minimize the trapped gas produced at Chief Joseph Dam, the Salmon Plan requires the Corps to develop a device called a spillway deflector. In 2002, this measure was not funded. The Corps is not on schedule to complete this project by 2004. **(RPA Action 136) FAIL**

Gas Abatement Options for Libby Dam. The release of water over Libby Dam traps gas in the water, which subsequently can be harmful for salmon and steelhead. The Salmon Plan requires the Corps to evaluate options for decreasing the levels of gas in the water near this dam. In 2002, the Corps produced very limited testing to assess the situation. **(RPA Action 137) INCOMPLETE**

Safe Passage Technologies (Removable Spillway Weirs) at Dams. The amount of water used to move salmon over dams and the level of gas that is trapped in the water below dams is related. In order to help move salmon and steelhead past the dams quickly and at the same time meet water quality standards, the Salmon Plan directs the Corps to investigate a new technology called a removal spillway weir (RSW). Testing of RSWs began in 2002 at Lower Granite Dam, but similar tests that the Plan calls for at other dams, including the testing of an RSW at John Day Dam in 2002, have not occurred. Because of confounding environmental factors, tests in 2002 were not conclusive about whether the Lower Granite RSW prototype is more efficient at passing salmon through dams than conventional methods of spilling water through the spillway (thus allowing more



Each federal dam on the Columbia and Snake rivers kills between 5-15% of the salmon that pass it.

power and less dissolved gas to be generated while still allowing salmon to avoid hazardous dam turbines). Further it has not been demonstrated that RSWs improve salmon survival. Survival tests are expected to occur in 2003. **(RPA Action 138) INCOMPLETE**

McNary Dam Temperature Controls. The McNary Dam has a history of causing water quality violations. In particular, extremely high water temperatures have been experienced at this dam. The Salmon Plan directs the Corps, working with other federal agencies, to assess and resolve the high temperatures experienced at this dam. To date, while several discussions have occurred, very little practical work has been done to reduce temperature violations at this dam. In 2002, temperatures ranged above 68° F 55% of the time between June 30 and September 1 with temperatures reaching as high as 71° F. **(RPA Action 142) FAIL**

Plan to Model Water Temperature Effects of Federal Dams. Water temperature increases due to the dams can cause injury and death to salmon and steelhead. The Salmon Plan requires the federal government to develop a water temperature model that will provide expected temperature conditions based on different and specific dam operations. The Salmon Plan required this model plan to be completed by June 30, 2001 including a focus on both Columbia and Snake rivers. To date, the plan has yet to be completed and the federal government now states that a finalized plan will not be completed until October 2003. Additionally, the federal government has decided that its model will only focus on the Snake River. The Columbia River impacts will not be included in the model. **(RPA Action 143) FAIL**



Surviving the Dams

Number of Actions Graded: 49

Fail= 18 • Incomplete= 16 • Pass= 15

Meeting River Flow Objectives. The Salmon Plan confirms the scientific conclusion that higher flows aid in the migration of young salmon past the federal dams. The Salmon Plan contains specific spring and summer flows for the Columbia and Snake rivers. In 2002, average flow levels described in the Salmon Plan were only obtained in the middle stretch of the Columbia River; average flows were never met in the Snake and lower Columbia rivers on a seasonal basis. Weekly and daily flow levels were only obtained on a periodic basis; Salmon Plan spring flows at Lower Granite Dam were met less than 25% of the time; summer flows at Lower Granite Dam were met less than 20% of the time; spring flows at McNary were met about 60% of the time; summer flows at McNary were met about 37% of the time; and flows at Priest Rapids Dam were met 88% of the time. **(RPA Action 14) FAIL**

Coordination of Flow & Spill Operations. Increasing river flows and spill levels are important in aiding the migration of young salmon and steelhead past federal dams. Increased flows decrease the migration time for young salmon and steelhead, and spill at the dams provides the best passage route past the dams. Because of the many parties affected by water management, the Technical Management Team (TMT), comprised of state and federal agencies, the Northwest Power Planning Council, and Public Utility Districts, has been developed.

The tribal, state, and federal fishery agencies made several requests to change operations at the dams to assist migrating salmon. However, less than half of the requested changes were implemented. **(RPA Action 17)**

FAIL

Operation of Upper Snake & Columbia River Dam

Reservoirs. The Salmon Plan directs the federal government to refill federal dam reservoirs as much as possible while still maintaining flood control until April 10. The purpose is to ensure that enough water will be available to meet Salmon Plan flow requirements to assist young salmon and steelhead migrating in the spring. By June 30, reservoirs should be completely filled to augment flows during the summer migration. Spring flows should be maintained during the April 10–June 30 refill period. In 2001, reservoir levels were far below the maximum flood control requirements. Review of end-of-the-month reservoir levels and requirements show that flood control targets were not met for Brownlee and Hungry Horse dams which were about 10 and 20 feet below targets, respectively. Grand Coulee and Dworshak dam reservoirs did meet flood control targets in April. Reservoir levels were short of refill levels for Libby, Hungry Horse, Grand Coulee, and Albeni Falls on June 30. Dworshak met the June 30 refill elevation. **(RPA Action 18) FAIL**

Flood Control Levels. The Salmon Plan sets forth specific requirements for maintaining certain federal dam reservoirs both to aid migrating salmon and steelhead and to protect against flooding. Of the five dams specifically mentioned in this action, only two generally met their targets. **(RPA Action 19) FAIL**

Operation of the Lower Snake River & John Day Dam

Reservoirs. Between April and September, reservoir levels at federal dams are decreased to increase the water velocity through the reservoir. Increasing water velocity is thought to increase the downstream migration rate for young salmon and steelhead, which increases their survival. In 2002, out of the 150-day period (between April & August 31) Lower Granite Dam, Little Goose Dam, Lower Monumental Dam, Ice Harbor Dam, and John Day Dam, were operated 5, 95, 1, 0, and 0 days, respectively above these required levels. **(RPA Action 20) PASS**

Flood Control Shifts in Upper Snake & Columbia. The Salmon Plan directs the Army Corps of Engineers (Corps) to implement flood control shifts from different reservoirs in the Columbia and Snake rivers as necessary to increase river flows in a manner that best protects listed salmon and steelhead. By shifting some of the flood control responsibilities from the Snake River to the mid-Columbia, Snake River flows can be met more frequently. Flood control shifts did occur between Dworshak Dam (on the Snake) and Grand Coulee Dam (on the Columbia). **(RPA Action 21) PASS**

Flood Control Changes. VARQ, or variable outflow, is a

more flexible approach to storing and releasing water than previously implemented. In years when flood control risks are low to moderate, dam reservoir levels are allowed to increase, allowing for increased releases in the Columbia River during the summer migration period. Under VARQ, Hungry Horse and Libby dams can provide 400,000 acre-feet (the amount of water in an acre 1 foot deep) and 1.5 million acre-feet of water, respectively, than under past constraints. In 2002, the Corps did not operate Libby under VARQ operations and only implemented limited VARQ operations at Hungry Horse. **(RPA Action 22) FAIL**

Banks Lake Operation. Banks Reservoir is an equalizing reservoir for the Grand Coulee pump-generating plant and provides water to irrigate 672,000 acres. The upper five feet of this reservoir contains 130,000 acre-feet of water that the Salmon Plan requires be used for summer flows in August. During August 2002, Banks Lake was not operated at these levels and as a result flows at the McNary Dam did not meet the Salmon Plan's requirements. **(RPA Action 23) FAIL**

Canadian Treaty for Water Storage. The headwaters of the Columbia River originate in Canada. Arrow and Mica reservoirs in Canada are some of the largest storage reservoirs on the Columbia River. Treaty storage negotiations have secured one million acre-feet of water from Canada. The Salmon Plan calls for continued negotiations to request more water from Canada to augment spring and summer flows in the Columbia River. One million acre-feet of water was delivered by Canada but no additional water was received through treaty discussions. **(RPA Action 24) INCOMPLETE**

Additional Non-Treaty Water from Canada. The Salmon Plan requires the federal government to secure more than one million acre-feet of water from Canada to assist in salmon and steelhead migrations. Negotiations to request water from Canada beyond that secured under the Treaty, or to change operations at Canadian dams (e.g., to retrofit Mica & Revelstoke dams with additional turbines) to augment summer flows in the Columbia River, are expected to help meet the Salmon Plan requirements. About one million acre-feet of non-treaty Canadian water was released to the U.S. in July and August. However, the federal government has not yet made a commitment to provide financial incentives to Canadian entities for the construction of additional turbines to further help salmon recovery. **(RPA Actions 25, 26) INCOMPLETE**

Banks Lake Operations to Increase Flow. The Salmon Plan requires the Bureau of Reclamation (BOR) to complete a National Environmental Policy Act (NEPA) process to determine if the Banks Lake reservoir could be operated to provide additional salmon flows in the summer. Banks Lake could offer up to 260,000 acre-feet in flow augmentation if the reservoir is kept five feet below its current level. This would provide migrating salmon and steelhead much needed water in the

summer. The Salmon Plan required the process to be completed by June 2002. BOR believes that the process will be completed by summer of 2003. **(RPA Action 31)**

FAIL

Flood Control Study. Adding more water to the Columbia and Snake rivers is a key aspect of the Salmon Plan's mechanism for supporting and recovering salmon in the Columbia and Snake River Basin. To that end, the Salmon Plan requires the Corps to develop and conduct a feasibility study on whether and how to change the current flood control rules to assist in getting more water flowing through the rivers at times when salmon need that water most. The Salmon Plan requires that the plan be developed and underway by 2003. Due to funding issues, the Corps has not completed the necessary steps to be on target for the 2003 check-in. **(RPA Action 35)**

FAIL

Revised Storage for Libby Dam. In order to get more water in the Columbia and Snake rivers, the Salmon Plan requires that the Corps study mechanisms for increasing spill at Libby Dam. The Salmon Plan required the Corps to complete this task by October 2002. NMFS has allowed the Corps a one-year extension. **(RPA Action 36)**

FAIL

Salmon Trucking & Barging at Snake River Dams During Low Flow Years. In medium-to-low water years, the Salmon Plan implements a "spread the risk" approach to salmon and steelhead recovery. That is, the Salmon Plan allows some salmon and steelhead to pass over dams while others are collected and put in barges and trucks and transported around the dams. Maximum transportation occurs, however, in years when spill and flow targets cannot be met and during summer migration of fall chinook. However, in 2002, a near-normal runoff year, most of the early spring migrants were transported from the Snake River, as no spill was provided from Lower Monumental Dam. Due to a late spring and early summer runoff when flows exceeded powerhouse capacity, fish were spilled over the dams during the late spring and part of the summer migrations. All fish that were collected were barged except those used for study purposes. **(RPA Action 40)**

FAIL

Spilling Water over McNary Dam. The safest route of passage at this dam is over the spillway and thus spill is supplied at McNary Dam to aid in the juvenile survival. The required spill volumes are specified in the Salmon Plan. In 2002, due to a late and sustained runoff that created flows exceeding powerhouse capacity, the Salmon Plan's spill requirements were met at this dam. **(RPA Action 41)**

PASS

Maximize Trucking & Barging of Salmon & Steelhead During Summer Migration. Based on past research, the Salmon Plan chose to maximize the number of young Snake River fall chinook that are transported by truck and barge. During the 2002 summer migration no spill was implemented at the Snake River dams and so

transportation of fall chinook was maximized. **(RPA Action 42)**

PASS

Limited Trucking & Barging of Fall Chinook at McNary Dam. Survival studies have shown that transporting fish from McNary Dam may not have significant beneficial impacts. Thus, the Salmon Plan allows subyearling fall chinook to swim down river at this dam as much as possible. In 2002, high river flow created forced spill at McNary Dam during the late spring and early summer and so salmon moved in the river. After flows subsided, full transportation was implemented. No fish were allowed to swim in-river except for study purposes. While the federal government's actions here did not comply with the intent of this action, the result did.

(RPA Action 43)

PASS

Decrease Trucking of Salmon & Steelhead in Snake River. Studies show that transporting young salmon and steelhead on barges is more beneficial than transporting them in trucks. Consequently, the Salmon Plan calls for a decrease in trucking Snake River salmon and steelhead. The Corps has also proposed a decrease in trucking by extending the barging period for another five weeks. In 2002, barging was extended beyond this five-week period, thus decreasing the reliance on trucking. Still, the majority of salmon migrating late were transported by truck. **(RPA Action 44)**

PASS

Evaluate & Implement Improvements at Collector Dams. The Salmon Plan directs the Corps to make annual evaluations and improvements at dams where salmon and steelhead are collected for transport. In 2002, the Corps evaluated and made changes to collection facilities at Little Goose and Lower Granite dams.

(RPA Action 53)

PASS

Annual Spill Program. As mentioned previously, the safest route past a dam is over the spillway. Therefore, the Salmon Plan specifies measures to increase juvenile fish passage over the federal dams. In 2002, spill targets in the Salmon Plan were generally met in the Columbia and Snake rivers. However, much of this was due to favorable natural conditions in the river. Moreover, spill at The Dalles Dam was ended early in exchange for a spill study in the non-fish passage season that was reluctantly agreed to by fishery managers.

(RPA Action 54)

PASS

Continue Planning & Design on Schultz-Hanford Transmission Line. This proposed 500 kilo-Volt (kV) transmission line in central Washington may make additional daytime spill in the lower Columbia River possible by restoring transmission capacity to allow for energy transfers with California. The Salmon Plan calls for this project to be implemented by 2004 or 2005. The Bonneville Power Administration (BPA) began NEPA review in 2001, and expects to issue a final environmental impact statement (EIS) in early 2003. Construction on the project is targeted for spring 2003. **(RPA Action 55)**

PASS



Courtesy of Columbia River Inter-Tribal Fish Commission

The Columbia River Basin was once home to 16 million salmon annually, sustaining tribal and non-tribal communities.

Continue Planning & Design on Joint Transmission Project to Upgrade West-of-Hatwai Cutplane.

This upgrade would make additional daytime spill possible at the Snake River dams by restoring Montana electricity transfer capability. The project is expected to be completed in the 2003-2004 timeframe. BPA has identified the 500 kV Grand Coulee-Bell project to meet the intent of this action. NEPA review for the Grand Coulee-Bell project began in early 2002 and a final EIS was issued in late 2002. BPA recently announced the formal approval of the project and construction is expected to be complete in late 2004. **(RPA Action 56) PASS**

Turbine Operations Optimal for Salmon. The Salmon Plan requires the Corps to operate its dams for optimal fish survival. The Salmon Plan spells out specific ways to ensure this optimization (e.g., peak efficiencies at the turbines) but also allows for other, equally beneficial methods to be found. The Corps does not strictly follow the 1% peak efficiency rate established by the Salmon Plan. Instead, the Corps allows for excursions from the efficiency rate for power and research needs and thus, the Corps allows digressions from this optimal level. The Corps' new standard can be found in the Corps' Fish Passage Plan, a plan in which fishery agency and tribal comments on turbine and other operations were largely disregarded. **(RPA Action 58) FAIL**

Turbine Adjustments to Improve Juvenile Salmon Survival.

The Salmon Plan orders the federal government to evaluate minimum gap runners (MGR), or so-called "fish-friendly" turbines. Specifically, agencies are instructed to investigate the potential for exceeding the upper limit of the 1% turbine operating efficiency band set to ensure higher juvenile salmon survival through turbines. The results of this investigation are to

be reported to the National Marine Fisheries Service (NMFS) by October 2003.

According to the Anadromous Fish Evaluation Program (AFEP) Annual Review, no such study took place in 2002. The Corps' list of 2003 projects shows a study assessing the operating rules for MGRs at Bonneville Dam is scheduled. It is unclear if that study will meet the intent of this action, or be completed by October. **(RPA Action 59) INCOMPLETE**

Adult Fallback & Young Salmon Survival Study at Bonneville Dam.

Sometimes, when large amounts of water are spilled over the dams to help young salmon migrate to the sea, adult salmon migrating up the river to spawn are pulled back over the dam and must retrace their efforts over the dam. The Salmon Plan requires the Corps and BPA to study the impacts of adult passage at Bonneville Dam under high spill levels. The agencies were required to look at impacts in 2002 and 2003 and then to suggest any operational change at the dam to provide better passage for salmon. The agencies did do some evaluation of this issue in 2002. The data is still being analyzed, but NMFS believes that changes in operations at the dam may occur before the 2003 spring migration. **(RPA Action 60) PASS**

Study Prototype Powerhouse at Bonneville Dam in 2001.

The young salmon survival rate past Bonneville Dam is one of the lowest in the federal dam system. The Salmon Plan required the Corps to complete an evaluation of this prototype at Bonneville Dam by 2001. The evaluation was completed in 2002 with a planned removal of the prototype in 2003. However, the state, tribal, and federal agencies viewed the prototype as too expensive and agreed to develop a different approach. **(RPA Action 61) INCOMPLETE**



The surest way to protect salmon in the Columbia and Snake River Basin is to provide more free-flowing river habitat.

Improvements at Bonneville Dam's First & Second

Powerhouse. The Salmon Plan required an evaluation of the fish screens at the dam by 2000. A decision on whether to move forward was to come from that review. Evaluations of the effectiveness of extended screens occurred in 2000. Earlier, the Corps stated that a decision on whether to move forward with implementation of the screens would be made in 2001 and that construction would be underway by 2002. Construction did not occur in 2002 and the current Implementation Plan calls for more testing in 2003 with construction beginning in 2005. Further technological improvements at Bonneville Dam regarding a debris removal facility are on hold until decisions regarding fish screens are completed. **(RPA Actions 62, 63, 65) INCOMPLETE**

Investigation of Minimum Gap Runners at Bonneville

Dam's First Powerhouse. Changes in pressure caused by turbines and direct hits by turbine blades are responsible for the death of young salmon and steelhead passing the Bonneville Dam. Minimum gap runners are expected to decrease the deaths caused by the turbines. Some research began in 1998 and continuing in 2000 on Bonneville turbine modifications. A final report on this investigation was due February 2001. According to the Anadromous Fish Evaluation Program Annual Review, research on the minimum gap runners did not occur in 2002, though it appears that additional studies will take place in 2003. **(RPA Action 64) INCOMPLETE**

Spill & Passage Survival Studies at The Dalles Dam.

The Salmon Plan directs the federal government to continue study methods to improve survival of young salmon and steelhead as they pass The Dalles Dam. Results were expected to be implemented to improve

spill survival by 2002, but no later than 2005. Due to the federal government's failure to spill in 2001, the efforts in this area are at least one year behind. Spill data was collected in 2002. **(RPA Action 68)**

INCOMPLETE

Testing of Occlusion Devices at The Dalles Dam. The Corps is directed to continue design, development, and 2001 prototype testing of occlusion devices at The Dalles Dam, with the goal of decreasing turbine passage rates and encouraging young salmon to pass the dam safely. The Salmon Plan also requires the Corps to install occlusion devices across the entire powerhouse, as warranted. The Corps tested these devices in 2001, but the tests were inconclusive. Testing in 2002 also did not provide certainty. Additional testing may be warranted. **(RPA Action 69) INCOMPLETE**

Twenty-Four Hour Spill at John Day Dam. The Salmon Plan required the Corps to continue studying 24-hour spill during both the spring and summer at John Day Dam in 2001, and then to make a recommendation on improving spill for salmon survival at John Day Dam by 2003. The Corps did not conduct the necessary experiments in 2001. In 2002, the Corps completed some experiments during the spring. Although the data is still being reviewed and the scope of the studies was more limited than required by the Salmon Plan, the Corps and BPA are recommending eliminating daytime spring spill at the dam. **(RPA Action 71) FAIL**

Develop Safe Passage Technology at John Day & Lower Monumental Dams. The Salmon Plan requires the Corps to design a prototype removable spillway weir (RSW) for passage at John Day Dam in 2002 and to compare the survival benefits of different passage tech-

nologies at Lower Monumental and John Day dams by 2003. Testing of a prototype RSW at John Day Dam should have been completed in 2002. Once testing and analysis are complete, the Corps is to install the best system at these dams. Several technical issues must be addressed before the prototype can be fitted for John Day Dam. NMFS and the Corps are hoping that further tests at Lower Granite Dam, including survival tests, will assist in determining what to do at John Day. On the other hand, the Corps is contemplating “fast tracking” an RSW for Lower Monumental Dam before it has proven to be biologically justified. The Corps did not meet the 2002 testing deadline and will unlikely meet the 2003 deadline. **(RPA Actions 72, 98, 99) FAIL**

New Fish Protection Screens at John Day. The Salmon Plan directs the Corps to design and construct a new screen system for John Day Dam to help salmon migrate downstream. The Corps’ problems with the passage technologies described above have delayed this measure. The Corps will be completing some additional testing in 2003. It is unclear whether the delays will allow the agencies to meet the 2003 deadline. **(RPA Action 73) INCOMPLETE**

Continue Design Development for Safe Passage at Lower Granite Dam. The Salmon Plan directs the Corps to continue the testing of different prototype devices, including a removable spillway weir (RSW), behavioral guidance systems and upper turbine intake occlusion devices, and assess whether these will help salmon and steelhead pass Lower Granite Dam safely. It is hoped that technologies will increase safe spillway passage by reducing forebay residence time, stress, and gas supersaturation due to higher spillway passage efficiencies. The Corps is actively testing some prototypes at Lower Granite Dam. The Corps completed several RSW tests in 2002 and plans some additional tests, including survival tests, in 2003. The Corps is also considering “fast tracking” the device at other Snake River dams even though the Salmon Plan only calls for installation if RSWs are biologically warranted. The Corps seems to be on schedule to meet the 2003 check-in requirements. **(RPA Action 80) INCOMPLETE**

Turbine Passage Survival Study. The Salmon Plan directs the Corps to provide NMFS with a report on the first phase of a Turbine Passage Survival Program. This report was to be delivered to NMFS by October 2001. Although testing has been set up at the McNary Dam, a final report has yet to be submitted to NMFS. **(RPA Action 89) FAIL**

Develop Comparison of Survival Benefits of By-Pass Facilities at Bonneville Dam’s First Powerhouse. The Salmon Plan directs the federal government to complete this comparison by 2002. Research has been conducted about the efficiency of diversion into the different bypass facilities. However, according to the Anadromous Fish Evaluation Program Annual Review,

estimates of relative survival benefits of different bypass systems did not occur in 2002. This action is also not included in the Corps’ Anadromous Fish Evaluation Program FY2003 research agenda. **(RPA Action 97) FAIL**

Adult Salmon Protections at Columbia and Snake River Dams. The Salmon Plan directs the Corps to study and then implement measures at federal dams that will reduce deaths caused by adult salmon passing through turbines. The Salmon Plan focuses particular attention on migration issues at Bonneville Dam. Study plans, recommendations, and a schedule for accomplishing this action will be developed through the annual planning process. The Corps has ongoing studies that are monitoring adult salmon and steelhead behavior at the dams. The 2002 studies were completed at McNary and Bonneville dams, but the studies at the lower Snake River dams are not completed. At Bonneville Dam, the test showed less of a correlation between spill and adult fallback than previously thought. The Corps believes more analysis is still necessary. In the future, the results from these studies are intended to be used for taking corrective measures. Given that more analysis is needed, no specific corrective actions have been put in place. **(RPA Actions 111, 113) INCOMPLETE**

Report on Adult Fishway at Bonneville Dam by 2001. Elevated gas levels have been found in the auxiliary water supply systems in the adult fishway at Bonneville Dam. These elevated levels may be harmful to salmon and steelhead. The Salmon Plan directed the Corps to complete a report by the end of 2001 that included measures to improve or replace aging components and helped minimize the gas level problems. This report was completed but recommendations for improvement are still under review. **(RPA Action 126) PASS**

Investigation of Bonneville Dam Adult Fishway to Ensure Its Operation. The Bonneville Dam Second Powerhouse adult auxiliary water facilities failed in 1997 during the peak of the adult fall chinook and steelhead migrations. The Salmon Plan directs the Corps to continue investigations of this fishway to ensure such failures are not repeated. The Corps is continuing its investigation at the Second Powerhouse and has addressed the water supply issue for the ladders at Bonneville Dam. The emergency backup auxiliary water system is on scheduled to be completed by 2003, but needs to be checked with operation of the new corner collector juvenile bypass system. **(RPA Action 127) PASS**

Maintain Juvenile & Adult Fish Facilities. The Salmon Plan directs the Corps to maintain and operate juvenile and adult fish facilities according to the criteria established in the Corps’ Fish Passage Plan. The Salmon Plan directs the Corps to coordinate with NMFS on the development of these criteria before the start of each fish passage season. Although the Corps’ 2002 Fish

Passage Plan was released and partially implemented, as in past years, some key recommendations from tribal biologists and engineers were ignored. **(RPA Action 144) INCOMPLETE**

Maintenance Programs. The Salmon Plan requires the Corps to develop preventative maintenance programs for fish passage facilities to ensure long-term reliability of these facilities. The current one-year Implementation Plan includes maintenance projects. The lack of coordination in the development of the Implementation Plans raises questions as to the impact of such projects, however. **(RPA Action 145) PASS**

Removal & Prevention of Debris from Fish Passage Facilities. The Corps is responsible for solving debris problems at federal dams. The current Implementation Plan includes a set of actions to improve problems caused by debris. Some of these projects were implemented in 2002. **(RPA Action 146) PASS**

Develop Recovery Goals. The current Salmon Plan is devoid of specific standards to judge whether it is successfully recovering salmon and steelhead in the Columbia and Snake River Basin. The Salmon Plan acknowledges this oversight by requiring these recovery standards to be developed by the 2003 check-in. Although NMFS has put together a team – called the Technical Recovery Team – to formulate these standards, this team is far from completing the recovery standards by the 2003 check-in. **(RPA Action 179) FAIL**

these creeks is also dependent on water levels and can be managed by outflows from Bonneville Dam. Access to these creeks was possible during the 2001-2002 spawning season. **(RPA Action 16) PASS**

Reduce Stream Flow Depletions. The Salmon Plan requires the Bureau of Reclamation (BOR) to ensure that any additional water transactions it makes will not harm listed salmon and steelhead. Currently, BOR operations in the Columbia River Basin contribute to stream flow depletions in the Columbia River during the salmon outmigration season. These depletions make it less likely that the federal government will meet the flow targets set forth in the Salmon Plan. The BOR believes that it is now meeting this requirement and will continue to do so into the future. **(RPA Action 27) PASS**

Illegal Stream Withdrawals. The federal government has found instances of unauthorized water withdrawals, or “water spreading,” from rivers and stream throughout the Columbia and Snake River Basin. The Salmon Plan requires the BOR to identify those illegal withdrawals and to submit to the National Marine Fisheries Service (NMFS) by 2002, a report that identifies where these illegal withdrawals are occurring and a plan for how to address them. This report has not yet been submitted to NMFS and there continue to be unauthorized withdrawals. **(RPA Action 29) FAIL**

Study & Improve Irrigation Project Impacts on Salmon Recovery. BOR must address effects of irrigation projects on tributary habitat and water quality as well as direct effects on salmon survival (e.g. impingement, entrainment in diversions, false attraction to return flows, and others). This analysis must be completed by 2003. All 10 projects have been reviewed by BOR. Formal consultation has not yet been completed on any of these projects and NMFS believes it is unlikely that such consultation will be completed by the 2003 check-in. **(RPA Action 30) INCOMPLETE**

Acquiring Upper Snake River Water for Flows. The federal government must acquire water for instream use from BOR's upper Snake River Basin irrigation projects and from the Idaho Power Company's Hells Canyon Complex during the spring and summer flow augmentation periods to improve the likelihood of achieving spring and summer flow objectives at Lower Granite Dam. The Salmon Plan requires 427,000 acre-feet of water from the upper Snake River Basin, all of which must be moved through by the Hells Canyon Complex in a timely fashion to benefit salmon and steelhead. For the past two years, BOR has worked with irrigators and the State of Idaho to help secure additional water in the Lemhi River that in turn provided more water flows in the Snake River. Unfortunately, no other substantive progress has been made on this measure and the federal government was only able to secure the timely movement of about 280,000 acre-feet of water to the Hells Canyon Complex. The timely pass-through of upper Snake water through the Hells Canyon Complex was not



Spawning & Rearing Habitat Improvements

Number of Actions Graded: 16

Fail=9 • Incomplete=3 • Pass=4

Flows to Support Chum Salmon Spawning in Ives Island. Chum salmon have established spawning grounds in the mainstem Columbia River, just below Bonneville Dam in the Ives Island area. This area is susceptible to dewatering. The Salmon Plan requires that Bonneville Dam be managed to ensure that this dewatering does not occur. Chum spawning begins in late October to early November with young salmon emerging in April. Flow levels are to be maintained during this time period to ensure successful emergence of at least 60% of the spawning beds. Water levels were maintained only after November 27, which may have prevented up to 80% of the potential salmon production in this area. **(RPA Action 15) FAIL**

Access for Chum Salmon Spawning in Hamilton & Hardy Creeks. In addition to the Ives Island area, chum salmon spawn in Hardy and Hamilton creeks. Access to



Healthy rivers provide recreational opportunities for all walks of life.

accomplished due to Bonneville Power Administration's (BPA) refusal to enter into a water/power exchange contract with the Idaho Power Company, and NMFS' inability to secure Section 7 consultation with FERC on the Hells Canyon Complex. **(RPA Action 32) FAIL**

Fish Screens at Burbank Irrigation Project. The Salmon Plan requires BOR to install fish screens at two pump stations at the Burbank irrigation project. These screens keep salmon and steelhead from moving into irrigation canals rather than staying in the rivers. The screens were to be installed by March 30, 2001 but are just nearing completion now. **(RPA Action 38) FAIL**

Bureau of Reclamation Priority Subbasins. The Salmon Plan directs the BOR to initiate habitat improvement programs in three priority subbasins per year over five years to address all flow, passage, and screening problems in each subbasin over ten years. In 2002, BOR should have initiated immediate work in the Lemhi, Upper John Day, Methow, Middle John Day, Upper Salmon, and Wenatchee subbasins, including beginning National Environmental Policy Act (NEPA) processes, requesting funding, and pursuing congressional authorizations for activities such as modifying screens and retrofitting passage barriers. It appears that BOR has begun or is planning to begin habitat restoration programs in at least half of these subbasins. BOR's ability to address all flow, passage, and screening problems, however, is hampered by the fact that it has not secured the necessary congressional authority. As a result BOR's scope of work likely does not meet the intent of this action. **(RPA Action 149) FAIL**

Bonneville Power Administration Funding of Productive Non-Federal Habitat. This measure puts a high priority

on protecting tributary habitat that is currently productive, in accordance with criteria and priorities that the federal government should have developed in 2001. Specifically, the Salmon Plan calls on BPA to protect these habitats through conservation easements, acquisitions, etc. In 2001, BPA and NMFS failed to develop the criteria for land acquisition. The criteria were ultimately agreed to by NMFS and BPA one year late. In addition, thus far in Fiscal Year (FY) 2003, BPA only committed one-third of the money for capital expenditures it had reserved for actions such as land acquisitions. Furthermore, in late 2002, BPA announced that it was placing all land or easement purchases on hold due to the agency's fiscal instability. **(RPA Action 150) FAIL**

Develop Methods for Improving Tributary Water Flows. Offsite mitigation is a key component to meeting survival standards in the Salmon Plan. Part of those off-site mitigation measures includes increasing tributary flows. The Plan directs the federal government to put together a program for increasing tributary river flows. The Salmon Plan required the development of a plan, the establishment of a non-profit entity, and an initial round of water solicitations. In 2002-2005, the Salmon Plan requires a fully operational project. In 2002, NMFS submitted draft protocols for a plan to BPA. The agencies are currently more than 2 years behind on this project. **(RPA Action 151) FAIL**

Protect 100 Miles of Riparian Habitat. The Salmon Plan directs BPA to negotiate and fund the protection of 100 miles of riparian habitat for 10 years. The full criteria needed to meet this goal were still under development in 2002. However, BPA has, in cooperation with the Conservation Reserve Enhancement Program, either

protected or begun negotiations for the protection of some riparian habitat. An estimate of the amount of riparian habitat protected to date was not available. Proposed cuts to BPA's fish and wildlife program would hinder BPA's ability to protect the amount of riparian habitat called for by this action. **(RPA Action 153)**

INCOMPLETE

Subbasin Assessments & Plans. The Salmon Plan directs BPA to work with the Northwest Power Planning Council (Council) to ensure the development and updating of subbasin plans and assessments to help implement the Council's Fish and Wildlife Program under the Northwest Power Act. In addition, BPA is required to fund the bulk of the Council's program. "Subbasin Planning" is a long-term habitat and watershed recovery program for non-federal lands focusing on state and local stewardship. The Salmon Plan requires that the planning efforts for priority subbasins be complete by the 2003 check-in. Furthermore, the Salmon Plan directs the federal government to identify habitat actions from subbasin plans (as they become available) in the one and five-year Implementation Plans and to work towards implementing those actions. The 2003/2003-2007 Implementation Plan does identify agreed-upon actions from the subbasin process. In addition, participating entities have reached agreement in identifying 14 priority subbasins. However, as a whole, the subbasin planning process is far behind schedule. Only about 1/3 of the subbasins, priority status notwithstanding, have begun the detailed process necessary for approval. Furthermore, BPA recently cut back the amount of funding it had agreed to provide for the process, leaving many priority actions in a state of flux and uncertainty. It appears highly unlikely that priority subbasins will be completed by 2003 as required in the Salmon Plan. **(RPA Action 154) FAIL**

Columbia and Snake River Habitat Improvements. Much of the Columbia and Snake rivers have been significantly degraded and federal dams have inundated important habitat. However, some salmon use reaches of these rivers for spawning habitat. The Salmon Plan requires BPA to work with other agencies to develop a program for identifying areas that need improvement and developing and initiating plans for such improvement. The Plan requires that the identification and development stages be complete by September 2003. Unfortunately, the federal government is still discussing how to approach this measure. No significant work has been completed to date and it is unlikely that the federal government will meet the Salmon Plan's deadline. **(RPA Action 155) FAIL**

Feasibility Study to Improve Chum Salmon Spawning Conditions at Ives Island. The Salmon Plan required this study to be completed by 2003. Feasibility studies to improve the spawning area near Ives Island were conducted 2001 and 2002. **(RPA Action 156)**

PASS

Habitat Restoration for Columbia River Chum Salmon.

One of the largest limitations to chum salmon recovery is the lack of suitable areas for spawning and rearing. The Salmon Plan directs BPA to fund actions to improve these areas for Columbia River chum. Habitat restoration efforts have been occurring in several areas including Duncan and Hardy creeks, two important areas for these fish. Due to restoration efforts in 2002, Duncan Creek is now accessible for spawning. **(RPA Action 157)**

PASS

Develop Estuary Habitat Compliance Monitoring

Program. Compliance monitoring is necessary to determine how well recovery actions are implemented from both a regulatory and biological perspective. The Salmon Plan required that NMFS and other federal agencies coordinate with the "Habitat Coordination Team" to develop a compliance monitoring program for inclusion in the first one and five-year Implementation Plan. The 2002 Implementation Plan did not include such a program, and so it was delayed. The recent one and five-year Implementation Plans also do not appear to specify this essential monitoring program, though NMFS has indicated that work has begun to develop a reporting procedure to meet project-tracking needs.

A proposal was submitted through the Power Council's rolling provincial review process by the Lower Columbia River Estuary Partnership (LCREP) that would, in part, address the habitat monitoring needs of this action by establishing a pilot program. Though it was approved for funding, there appear to be lingering questions about the coordination of this program with state and federal efforts. **(RPA Action 163) INCOMPLETE**



Hatcheries & Harvest

Number of Actions Graded: 16

Fail= 10 • Incomplete= 5 • Pass= 1

Development of Selective Fishing Methods & Gear. The Salmon Plan recognizes that the harvest of salmon and steelhead has been significantly reduced in the Columbia River Basin over the past decade.

Consequently, the Salmon Plan does not recommend any additional fishery constraints. Instead, the Salmon Plan focuses on the development and deployment of selective fisheries to allow an increase in harvest without raising the impacts to threatened and endangered fish.

Specifically, the Salmon Plan orders the federal government to work with state and tribal fishery managers to engage in and fully fund a multi-year program to develop, test, and deploy selective fishing methods and gear, such as live-capture gear, traps, seines, tangle nets, and revival tanks.



We owe it to future generations to save the last remaining wild salmon and steelhead in the Northwest.

Thus far, the major action in this area has focused on the development of a non-tribal commercial tangle net fishery for spring chinook in the Columbia River. The fishery rapidly expanded from an experimental fishery in 2001 to a demonstration fishery in 2002. Although there have been concerns about the inability to adequately assess deaths for released fish, the use of recovery tanks has been successful. There appears to be interest in developing a tangle net fishery for coho in fall 2003. **(RPA Action 164) PASS**

Improving Fishery Management Systems. The current tools used to manage, monitor, and assess salmon harvest strategies were developed before the implementation of selective fisheries. As such, the Salmon Plan orders the federal government to work with state and tribal fishery managers to develop and update the current fishery management systems to better comply with new fishery management strategies. Specifically, the Salmon Plan requires that the development of analytical modeling tools, and updating of catch sampling and data recovery systems be completed by the 2003 check-in. Finally, the Salmon Plan requires federal agencies to develop improved methods for estimating the incidental deaths of threatened and endangered fish from selective fishery practices.

The Selective Fisheries Evaluation Committee (SFEC) under the Pacific Salmon Commission has spent a considerable amount of time attempting to develop tools that adequately estimate deaths from selective fishery practices, though it is worth noting that this effort is not funded by BPA. Fishery assessment models are in the process of being modified to incorporate these effects, but data does not yet exist to validate the modeling assumptions. Limited resources continue to hamper the development of improved fishery manage-

ment systems. It appears unlikely that these systems will be updated by the 2003 check-in. **(RPA Actions 165-167) FAIL**

Crediting Harvest Reform Measures. The harvest strategies required by the Salmon Plan are designed to help meet the offsite mitigation goals for dam impacts to threatened and endangered salmon. The Salmon Plan orders the federal government to work with state and tribal fishery managers to develop methods to credit harvest reforms, and the survival benefits they produce, towards dam mitigation responsibilities. A crediting approach should be agreed upon and in place by 2003. Credits should only be given to those reform measures funded through dam operation.

Though the federal government proposed convening tribes and agencies to develop a crediting approach in 2002, it does not appear that these talks have gotten off the ground. Consequently, it is unlikely that a crediting approach will be in place by 2003. **(RPA Action 168) FAIL**

Reforming Existing Hatcheries. To help implement hatchery reforms, the Salmon Plan requires the development of Hatchery and Genetic Management Plans (HGMPs) to provide a standard approach and consistent information about artificial salmon production programs. The Salmon Plan requires that the federal government first fund the development of NMFS-approved HGMPs for the most at-risk species (upper Columbia and Snake River salmon). HGMPs for all Columbia River Basin hatchery programs should be completed and approved by the 2003 check-in. BPA is responsible for a considerable amount of the O&M and capital costs of these reforms, while the remainder of funding will be sought through congressional appropriations.

HGMPS are underway for a number of facilities and a few have already been completed. It appears that progress is being made on HGMPS for the most at-risk species, particularly in the Snake River Basin. However, it is unclear how the information generated in the HGMP process will be used to reform existing hatchery programs to assist recovery. Moreover, to date BPA has failed to commit a large portion of its capital expenses to hatchery reforms. Though Snake River Basin HGMPS may be in place by the 2003 check-in, it is less likely that upper Columbia River plans will be complete. **(RPA Actions 169-173) INCOMPLETE**

Comprehensive Hatchery Fish Marking Program. The Salmon Plan required that NMFS and BPA coordinate the development of a comprehensive marking strategy for all salmon and steelhead artificial production programs in the Columbia River Basin by the end of 2001. Moreover, these agencies were to provide funding in Fiscal Year (FY) 2002 to begin marking for all spring chinook salmon that are currently released unmarked, and to obtain funding for sampling efforts and experiments to determine the distribution and timing of hatchery and natural spawners.

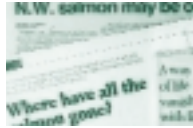
The development of this program was not completed in 2001 as anticipated in the Salmon Plan. In 2002, NMFS-led discussions did begin, concentrating on developing a set of guidelines for marking and sampling rates. However, to date those discussions have since stalled. Thus, a comprehensive fish-marking strategy was not developed in 2002, and is now two years behind schedule. Agencies did begin marking all spring chinook in 2002, but this action was implemented one year late. **(RPA Action 174) FAIL**

Safety-Net Artificial Production Programs (SNAPP). A number of salmon and steelhead populations in the upper Columbia and lower Snake River Basins are at a particularly high risk of extinction in the near term. In an attempt to prevent extinction, the Salmon Plan calls for the development of safety-net projects designed to intervene with artificial production techniques. These programs, called Safety-Net Artificial Production Programs (SNAPPs) are designed only to prevent extinction and not to serve as substitutes for long-term recovery. The Salmon Plan stresses the importance that these programs be designed and implemented early, and emphasizes that the purpose of the programs will be undermined by delay. The Salmon Plan also calls on BPA to fund the implementation of these safety-net programs by 2002, as well as to commit to a process whereby funds can be made available quickly for additional safety-net programs.

BPA is in the process of contracting with appropriate researchers, and an analytical framework has been developed for actions to prevent extinction. Planning has also begun for the Grand Ronde and Tucannon rivers. However, the process for the most at-risk species is delayed, and safety-net actions for high-priority populations did not begin in 2002. **(RPA Actions 175-178)**

FAIL

Hatchery Reform Studies. The Salmon Plan directs the federal government to evaluate ways to reform current hatchery practices that may have adverse impacts on salmon and steelhead recovery. In addition the Salmon Plan requires an assessment of whether conservation hatcheries are helpful in the recovery of a species. These studies must be identified and initiated by the 2003 check-in. To date, the federal government has not been able to identify the priority studies let alone initiate any of them. It is unlikely that the federal government will be able to meet the 2003 deadline. **(RPA Action 184) FAIL**



Studies and Reporting

Number of Actions Graded: 47

Fail= 13 • Incomplete= 15 • Pass= 19

One & Five-Year Implementation Plans. The Salmon Plan requires the federal government annually to create plans to implement specific measures to address dams, habitat, hatcheries, harvest, as well as the research, monitoring and evaluation needed to meet the requirements of the Salmon Plan. Past changes to the federal dam system have failed to halt the decline of salmon and steelhead populations much less recover these species; therefore, a guide is necessary to outline changes needed from past practices. The plans are expected to be coordinated through the region's tribal, state, and federal fish and wildlife managers. National Marine Fisheries Service (NMFS) and US Fish and Wildlife Service (USFWS) must then determine the adequacy of these plans. The plans must consider the current status of the various salmon and steelhead populations, recent data or results of research monitoring and evaluation actions, feasibility and timing of implementing each measure, and the probability of success for each measure.

The one-year plan should address project-specific detail needed to implement the first year of the more general five-year plan. The five-year plan should explain how actions together contribute to meeting the performance standards. The Salmon Plan required the federal government to complete the one and five-year plans by September 1, 2002, or a date mutually agreed upon by federal agencies. The 2003/2003-2007 Implementation Plans were released in November 2002. These plans were not developed in coordination with state and tribal fisheries managers. Instead these managers were only given an opportunity to provide comment. NMFS and USFWS have yet to provide a formal review of these plans. Although some elements of these plans (see below) have met the basic requirements outlined in the Salmon Plan, as a whole the plan fails to meet both the intent and specific key elements of this measure. **(RPA Action 1) FAIL**

One & Five-Year Plans for Dam Improvements. The Salmon Plan states that each one and five-year implementation plan must describe specific dam-related actions to be taken in the coming year. To assure broad input into decisions regarding the operation of federal dams, the plan requires that the actions be coordinated through the NMFS Regional Forum and led by the Implementation Team. The 2003/2003-2007 Implementation Plan for the Salmon Plan includes dam-specific actions to be taken in the coming year, with varying specificity. Sufficient coordination, however, with tribal governments and state agencies, as described in the Salmon Plan, did not occur. **(RPA Action 2) INCOMPLETE**

One & Five-Year Water Management Plans for Federal Dams. Many of actions described in the Salmon Plan rely on river flow augmentation and spilling water over dams. The water management plan, which includes flow and spill objectives, is necessary to provide guidance on managing water resources and is required to be completed and integrated into the one-year Implementation Plan by September of the prior year. The 2002 plan was completed on May 22, 2002, eight months after the deadline and more than a month after the start of the migration season. The 2003 plan was completed in October 2002. **(RPA Action 3) FAIL**

One & Five-Year Capital Investment Plans. The capital investment plan, coordinated through the System Configuration Team, should prescribe needed investments, research, monitoring, evaluation, and O&M actions to address specific objectives for improving salmon passage and water quality. The plan should be accompanied by detailed operation and maintenance needs as well as a budget associated with recommended actions, and developed on an annual basis. The 2003/2003-2007 Implementation Plan for the Salmon Plan includes a list of dam projects intended to enhance juvenile and adult fish passage and survival, including some measures that address water temperature and dissolved gas. The level of detail surrounding each project varies considerably. Furthermore, the actions are not accompanied by operations and maintenance needs or associated budgets. **(RPA Action 4) FAIL**

One & Five-Year Water Quality Plans. The Water Quality Plan, coordinated through the Water Quality Team, should define objectives, priorities, and criteria for measures to improve water quality in the Columbia and Snake rivers. The plan should also recommend specific federal dam operational improvements necessary to improve water quality, including improvements related to gas and temperature monitoring needs, and related studies. The Water Quality Plan should be developed and updated on an annual basis, and coordinated with the annual Water Management and Capital Investment plans. The 2003/2003-2007 Implementation Plan includes a series of annual water management

actions aimed at enhancing fish survival, as well as a series of measures aimed at addressing dissolved gas concerns. The Water Quality Plan still omits specific actions necessary for the dams to comply with temperature standards in the Columbia and Snake rivers. **(RPA Action 5) FAIL**

One & Five-Year Operation & Maintenance (O&M) Plans. The Salmon Plan directs the federal government to establish and implement, through the annual planning process, one and five-year O&M plans and budgets that improve fish facility operations at federal dams. This plan is specifically required to address the growing backlog of needed maintenance actions. The O&M Plan should be developed by the Army Corps of Engineers (Corps) and approved by the System Configuration Team. The Corps' resource capabilities to undertake and implement O&M actions should also be considered. The 2003/2003-2007 Implementation Plan contains a series of actions outlining both routine and non-routine O&M needs. Since the Implementation Plan is not accompanied by a budget, it is difficult to determine whether the Corps' resource availability has been fully considered. **(RPA Action 6) FAIL**

One & Five-Year Habitat Plans for Offsite Mitigation. The Salmon Plan relies on habitat improvements to save salmon and steelhead instead of making major changes at the federal dams. Habitat measures are included in the 2003/2003-2007 Implementation Plan. **(RPA Action 7) PASS**

One & Five-Year Hatchery & Harvest Plans. Hatchery production increased dramatically after construction of the federal dams in 1975 in an attempt to mitigate for the expected loss of salmon and steelhead populations. Now some hatchery practices are believed to be harmful to wild salmon and steelhead populations. The Salmon Plan calls for improvement to hatchery practices. The plans should outline specific hatchery reforms.

Harvest of salmon and steelhead in the Columbia River Basin was substantial for the first half of the century. Since the listings under the Endangered Species Act, fishing of salmon and steelhead has been drastically reduced. Management agreements and treaties govern harvest rates between Canada and the U.S., and between several states (CA, OR, WA, AK) and tribes. The plans are only meant to outline how the federal government can facilitate changes in harvest practices. Hatchery and harvest measures are included in the 2003/2003-2007 Implementation Plan. **(RPA Action 8) PASS**

One & Five-Year Research, Monitoring & Evaluation Plans. These plans are meant to determine the effectiveness of the suite of actions in the Salmon Plan. The one and five-year Implementation Plans should describe the research, monitoring, and evaluation programs that are to be implemented to reduce critical uncertainties, identify potential survival improvements, and be used in assessing the effectiveness of the RPA



Salmon recovery will provide additional fishing opportunities, bringing needed dollars into the Northwest.

management actions in recovering listed stocks (i.e. meeting performance standards). The research, monitoring, and evaluation programs are included in the 2003/2003-2007 Implementation Plan. **(RPA Action 9)**

PASS

Recovery Planning. Recovery planning is a comprehensive process led by NMFS to address and provide solutions to the factors and problems that have led to the decline of Pacific salmon and steelhead. The Salmon Plan directs NMFS and other federal agencies to incorporate the results of recovery planning into its annual implementation plans and the Northwest Power Planning Council's (Council) Fish and Wildlife Program on an annual basis. However, as anticipated, the results of recovery planning were not completed in time for the Council's first provincial review process. NMFS-convened Technical Recovery Teams (TRTs) for the Interior and lower Columbia regions have been meeting to identify fish population goals for abundance, delisting scenarios, habitat characterizations, etc. It is anticipated that the focus and design of the Council's provincial review projects may change in response to the TRT findings.

(RPA Action 10) INCOMPLETE

Unanticipated Actions. The Salmon Plan called on the federal government to develop, by September 2001, formalized procedures for carrying out actions that could not be anticipated in the planning process, but are necessary to achieve performance standards. Specifically, the federal agencies are directed to work with NMFS and the USFWS to develop an expedited process for implementing new or unplanned activities that result from new findings, constitute emergency actions, or present unforeseen opportunities. The federal government failed to establish this formalized process in 2001, and has

indicated that in 2002 and beyond it will continue to rely on an informal process. **(RPA Action 11) FAIL**

Approval of Plans. The Salmon Plan directs NMFS and USFWS to participate in the review, development, and approval of the annual one and five-year Implementation Plans. As such, the federal government must coordinate this review and approval in a timely manner. Specifically, within 45 days of receipt of each one-year plan, NMFS and USFWS are instructed to issue a findings letter regarding the adequacy of the plan. On July 30, 2002 NMFS issued its findings regarding the federal government's 2002 implementation plan, which was released in November 2001. Therefore, NMFS' findings were not available for a majority of the implementation schedule in 2002. The federal government released its 2003/2003-2007 Implementation Plan in November 2002. As of this writing, NMFS has yet to issue its findings regarding the adequacy of the 2003 plan. **(RPA Action 12) FAIL**

Annual Reports on Achieving Performance Standards.

The Salmon Plan sets forth some (but not all) standards by which the federal government plans to judge the success of the Salmon Plan. Although some performance standards cannot be evaluated until adults return or standards are developed, several performance standards are annual goals. The annual reports are meant to document findings regarding compliance by the federal government with the measures and schedules described in the Salmon Plan and in the one and five-year Implementation Plans, progress toward meeting interim and long-term performance standards, dam improvements, and non-mainstem, habitat improvements. The Salmon Plan does not make clear when annual progress reports are due. Presumably, this infor-

mation would be extremely valuable in developing the following years' one-year Implementation Plan. The 2001 annual Progress Report was not available to assist in the planning of 2002. The 2002 annual Progress Report has yet to be completed. **(RPA Action 13) FAIL**

Study Plan for Evaluating Trucking & Barging at McNary Dam. The Salmon Plan requires a plan for evaluating the transportation of upper Columbia River salmon and steelhead at McNary Dam. The Salmon Plan called for the plan to be completed by 2001 and states that research should be underway in 2002. The Corps has developed a plan and began implementation of field studies in 2002. **(RPA Action 45) PASS**

Study on Trucking & Barging Snake River Chinook & Steelhead. In an attempt to circumvent the impacts of the Columbia and Snake River dams, young salmon and steelhead have been captured at the upper dams on the lower Snake River, put in barges or trucks and released below Bonneville Dam. For several years, evaluation of the efficacy of these transportation programs has been studied and the Salmon Plan required further study to be coordinated through the annual planning process. In 2002, the studies begun in 2001 continued. **(RPA Action 46) PASS**

Evaluation of Delayed Mortality between Transported & In-River Salmon. Stressful experiences in a barge, in a truck, or migrating through reservoirs and dams may not kill a fish immediately but may reduce survival later in the life cycle. This phenomenon is referred to as delayed mortality. Delayed mortality has been shown to be higher for barged and trucked fish than for fish traveling through the river naturally. The relative difference in delayed mortality between these two groups is called the "D" value. The Salmon Plan acknowledges that we have very little information regarding the "D" value and, as such, it requires a thorough evaluation. Some studies regarding delayed mortality for spring/summer chinook salmon have been completed. The Comparative Survival Study completed by Bouwes et al. in 2001 estimated a delayed mortality number that was lower than that used by NMFS in the Salmon Plan. This suggests that the analysis NMFS conducted for the Salmon Plan is at best inadequate and overstates the benefits of the Salmon Plan on the overall survival of salmon. The Salmon Plan requires NMFS to update its analysis on this issue by the 2003 check-in. This study and a study conducted by NMFS continued in 2002. The federal government did not complete similar studies for steelhead and fall chinook and thus may have difficulty meeting the check-in deadline. **(RPA Action 47) INCOMPLETE**

Survival Studies for Transported Fish. The Salmon Plan requires the Corps to evaluate mechanisms for improving the post-release survival of transported salmon and steelhead. In 2001, the Oregon Cooperative Fish and Wildlife Research Unit at Oregon State University con-

ducted research about the feasibility of documenting salmon behavior and survival below Bonneville Dam (Schreck et al. 2001a, Schreck et al. 2001b). Work is continuing on this study. In addition, NMFS conducted another study in 2002 to evaluate this issue. **(RPA Action 49) PASS**

Install & Investigate Salmon Detectors & New Technologies. The Salmon Plan acknowledges the import of having information about salmon migration at the dams. As a result, the Salmon Plan required the installation of special detectors – called PIT tag detectors – installed at McNary and Bonneville dams by the 2003 migration season. Additionally, the Salmon Plan directs the federal government to investigate new, state-of-the-art fish detection devices. The detectors will help monitor salmon migration and will assist in future studies. Pit-tag detectors were installed at McNary and Bonneville dams in 2002. Additionally, research on the use of new technology – called acoustic tags – continued in 2002. **(RPA Actions 50, 192, 193) PASS**

Optimizing In-River Passage. The Salmon Plan requires the Corps and BPA to identify and implement measures to optimize in-river migration if studies show that salmon survival in-river is no different than salmon survival in trucks and barges. In 2001 NMFS researchers published results that suggest that transported fish do not survive better than fish that travel in-river. Other studies came to similar conclusions (e.g., Bouwes et al. 2001). However, the federal government did not change dam operations to address this information. **(RPA Action 51) INCOMPLETE**

Identify & Implement Improvements to Trucking & Barging. Because a majority of migrating young salmon and steelhead are transported, the Salmon Plan directs the Corps to identify and make improvements to the trucking and barging program. The greatest potential for transportation improvements is to reduce post-release mortality. Studies were conducted in 2001 to look at timing of transport release to increase post-release survival. Also, in 2001, researchers at the Idaho Cooperative Fish and Wildlife Research Unit at University of Idaho investigated whether stress and survival of young chinook salmon results from frequent interactions with steelhead while in the barges. Additional studies continued in 2002. The results of these studies were inconclusive. No improvements in transportation were summarized in the Corps' Anadromous Fish Evaluation Program Annual Review. **(RPA Action 52) INCOMPLETE**

Predation Study at Little Goose Dam. Before the 2000 migration, the Salmon Plan directed the Corps to conduct studies and make changes at the Little Goose Dam to minimize or eliminate aquatic predators. A new mechanism at the dam that contains debris flowing in the water had been shown to provide a hiding place for salmon and steelhead predators. This action was proposed to address that concern. Studies in 2001 indicat-

ed that predators were not as abundant as originally thought. Additional evaluations of the technology are proceeding on schedule. **(RPA Action 79)**



Communities that depend on salmon depend on this plan's implementation and success.

stream to the ocean. These fish may return to spawn again, but in order to do so must navigate their way back through a series of dams. The Salmon Plan directs the Corps to initiate an assessment program to determine the magnitude of kelt passage and potential actions to provide safe passage through the dams and report the results by 2003. Two separate studies on kelt abundance and passage were conducted in 2002, one focusing on the lower Columbia River, and the other on the Snake River Basin. Further studies are planned for 2003. **(RPA Action 109) PASS**

Adult Counting Station Rehabilitation Studies. Many of the current facilities at the dams to count adult fish are old and in need of repair. The Salmon Plan requires the Corps to study the effectiveness of the counting stations and make changes where needed. These studies are currently underway and the Corps has plans for replacing some outdated counting station components. **(RPA Action 117) PASS**

Prespawning Adult Fish Mortality Studies. The Salmon Plan directs the Corps to develop and implement a program to assess the pre-spawning mortality of adult salmon and steelhead by 2003. The studies are already underway. **(RPA Action 118) PASS**

Monitoring Program. The Salmon Plan requires the federal government to design and implement a program for monitoring the implementation of the Plan's measures. Protocols were to be developed by September 2001 and the program was to be implemented in the spring of 2002 with full implementation no later than 2003. The federal government missed the 2001 and 2002 deadlines. NMFS has recommended at least a one-year extension. Currently the federal government

has a plan for how to implement this measure, but it is unclear, given how far behind it is, whether or how the federal government will be able to meet the 2003 check-in deadline. **(RPA Action 180) FAIL**

Satellite Imagery of Columbia Basin. The Salmon Plan requires the development of an aerial or satellite imagery of the whole Columbia River Basin. This imagery is necessary to evaluate biological performance standards in 2005 and thus must be in place by 2003. The federal government is wholly behind on implementing this measure. As a result, NMFS and other agencies have decided to limit the scope of the imagery to just those areas where salmon and steelhead reside and to attempt to fulfill the 2003 deadline by gathering current imagery data rather than providing a picture of the current Basin. The federal government will attempt to have a review of the past imagery data available by the 2003 check-in, but the completion of one set of images by the 2003 check-in is unlikely. **(RPA Action 181) FAIL**

Hatchery vs. Wild Reproductive Studies. The Salmon Plan directs the federal government to study the reproductive differences between hatchery-raised and wild salmon and steelhead. The Salmon Plan requires 2-4 studies for each population of salmon and steelhead to be underway by 2003. It is unlikely that more than one study per population will be underway by 2003 and some population studies may not even have one study underway by the deadline. **(RPA Action 182) FAIL**

Effectiveness Monitoring Studies. The Salmon Plan requires the federal government to initiate at least three studies on the effectiveness of recovery actions for each salmon and steelhead population. Key studies

need to be identified and implemented by late 2003. No specific studies are identified in the 2002

Implementation Plan and no studies meeting these requirements have been funded. It is unlikely that the federal government will be able to meet the 2003 deadline. **(RPA Action 183) FAIL**

Tagging & Recapturing Studies. Estimating the relative survival rates for transported fish versus fish that are allowed to travel in the river will help resolve uncertainties about the efficacy of particular actions set forth in the Salmon Plan. In order to make precise estimates of this survival difference, large numbers of young salmon need to be tagged so that federal agencies can watch the fish migration behaviors. As a result, the Salmon Plan requires the additional tagging of the fish and the studying of the relative survival differences between transported and in-river migration. Fish marking and recapturing programs were conducted in 2001 and 2002. NMFS and the Columbia Basin Fish & Wildlife Authority have approved expanded studies as required in the Salmon Plan, but the funding for this expanded research is unlikely to materialize. **(RPA Action 185) INCOMPLETE**

Delayed Mortality below Bonneville Dam. The Salmon Plan directs the federal government to establish a comparative evaluation of the behavior and survival of salmon and steelhead that travel in-river to those that travel in trucks and barges. The federal government will use this information to determine the causes of delayed mortality (see RPA Action 47) between Bonneville Dam and the mouth of the Columbia River. Studies on the issue are currently underway, but there is serious disagreement between federal agencies, states, and tribes on some critical aspects of the federal study design. This disagreement may lead to federal study results that are regionally contested. The information obtained in these studies will then be used to partition the mortality of salmon and steelhead among various contributing factors, as required by RPA Action 195. **(RPA Actions 186, 195) INCOMPLETE**

Transportation Effects on Ocean Entry. The Salmon Plan directs the federal government to study the impacts of transporting fish on their timing for entering the ocean and thus their overall survival. Understanding these impacts may help identify when transportation is the most effective. In 2002, NMFS designed and began such a study. The first set of results is not expected until 2004. **(RPA Action 187) PASS**

Lower River Salmon Tagging & Study. Lower Columbia River salmon and steelhead are genetically similar to Snake River salmon and steelhead and prior to dam construction these fish experienced similar population growth patterns. However, after completion of the dams, Snake River salmon and steelhead populations declined more rapidly than lower Columbia populations. Snake River salmon and steelhead must transverse eight dams while lower Columbia fish have only one to three

dams to maneuver. Understanding this different rate of decline will help assess the impact of additional dams on Snake River fish and tease out the impacts of ocean cycles on the survivability of these fish. In 2002, Oregon Department of Fish & Wildlife began tagging efforts for lower Columbia River chinook and steelhead. However, it is unclear whether the federal government has a well-defined study in place that will be able to use information gained by the state's tagging efforts. **(RPA Action 188) INCOMPLETE**

Calculating the Rate of Adult Salmon Returns for Different Passage Options. The rate that adult salmon and steelhead return to the Columbia and Snake rivers to spawn is different depending on which way the fish passed the dams when it migrated out to sea as a juvenile. Fish that are transported around the dams have high survival rates past the dams, but have lower adult return rates than fish that migrate in-river. The Salmon Plan directs the federal government to study the differences between these passage options. Studies on this issue continued in 2002. **(RPA Action 189) PASS**

Studies on Early Life History of Snake River Fall Chinook. The survival, growth, migration rates, and other early life history attributes have been monitored in the free flowing section of the Snake River above Lower Granite Dam since the early 1990s and continued in 2002. **(RPA Action 190) PASS**

Continue & Improve Adult Salmon & Steelhead Counting Programs at Federal Dams. Enumerating the number of adult salmon at several federal dams is important in estimating adult timing, smolt-to-adult survival rates, adult survival rates, and other information. These counts continued in 2002; however, as in previous years, reporting methods do not appear to have changed. **(RPA Action 191) INCOMPLETE**

Develop Common Data Management & Monitoring Systems. NMFS has identified the need for a single, comprehensive data management system to ensure the integration of various monitoring and evaluation information, such as the application of performance standards. To meet this need, the Salmon Plan requires that the federal government develop and implement common data management and monitoring systems for fish populations, water quality, and habitat data, in coordination with the Northwest Power Planning Council, states, and tribes by 2003. Implementation of this action is necessary to evaluate biological performance standards in 2005 and 2008.

In 2002, NMFS noted that federal agencies had barely begun the preliminary steps necessary for funding and eventually implementing this action and as such it is unlikely that the full scope of this RPA will be completed by 2003. Similarly, the federal government has acknowledged that in 2003, some data management systems will be in place, but will not include all the information requirements for fish populations, water quality, and habitat data. **(RPA Action 198) FAIL**

Anticipated Research & Monitoring Actions/ESA

Authorization. The Salmon Plan indicates that scientific research and monitoring are critical parts of the overall program to minimize the impact of the federal dams on protected salmon and steelhead populations. The research and monitoring actions identified in the plan are only a subset of those research activities that will eventually be carried out by federal agencies, once new information comes to light. Many of these research actions could not be determined in sufficient detail at the time of the Salmon Plan's release. As the need for new study plans become clear, NMFS anticipates the need for additional permits under the Endangered Species Act (ESA) to allow for the "taking" of protected species for research needs.

The Salmon Plan does, however, describe a specific list of research needs that were anticipated as necessary for the implementation of various recommended actions. The Salmon Plan grants an ESA permit for a list of 25 specific research needs and requires the federal government to implement those actions by the 2003 check-in. A number of the research actions listed are currently being implemented, or are expected to be complete in 2003. It is unclear if all 25 actions will be complete by the 2003 check-in. **(RPA Action 199)**

INCOMPLETE



Funding

Estuary Protection & Funding. The Salmon Plan has several actions aimed at restoring the Columbia River estuary and plume, vital habitat where Columbia and Snake River salmon and steelhead make the transition from fresh water to saltwater. These actions have two main purposes: 1) to protect 10,000 acres of tidal wetlands in the estuary; and 2) to undertake the monitoring and other scientific research necessary to better understand the importance of the estuary and to restore estuary habitat for juvenile and adult salmon and steelhead. Some progress was made toward these goals in 2002, but many actions that the Salmon Plan called for in the first two years were not accomplished, due in large part to inadequate federal funding. Congress approved less than \$200,000 for estuary restoration in fiscal year 2002, and as of this writing it appears unlikely that the \$2 million President Bush requested for estuary

restoration will make it through Congress for fiscal year 2003. However, even that \$2 million would constitute only a fraction of the \$30 million that the Northwest Power Planning Council has estimated would be necessary to fully implement this measure over the first two years. This funding shortfall guarantees that the federal government will not be able to meet the Salmon Plan's timeline for restoring the estuary. Nevertheless, some progress was made in less-funding dependent areas including selecting monitoring and research sites, improving monitoring technology, taking an inventory of estuary habitat, and coordinating habitat actions. More funding for estuary restoration programs would help rectify a problem plaguing Salmon Plan implementation in general: a lack of coordination among the federal agencies. This stems in part from the fact that many worthwhile estuary restoration and science projects are competing for funding from insufficient, disparate sources. **(RPA Actions 158-162, 194, 196, 197) FAIL**

General Funding. Due to a lack of transparency in the Administration's budget requests and the federal agencies budgets, funding for individual actions required by the Salmon Plan is difficult to discern. However, the general state of Columbia and Snake River salmon recovery funding can be ascertained by examining how well Congress funded the programs that provide the money for the individual actions called for by the Salmon Plan.

The federal agencies responsible for recovering Columbia and Snake River salmon have acknowledged the need for a sharp increase in funding. An internal National Marine Fisheries Service document written just prior to the December 2000 release of the Salmon Plan estimated a need for combined federal and Bonneville Power Administration funding of \$857.9 million in fiscal year (FY) 2002 and \$918 million in FY 2003. Instead, the Salmon Plan only received \$439.8 million in FY 2002. As of this writing, the situation for FY 2003 is still unresolved, but the spending bills under consideration by Congress would keep funding levels very close to those of FY 2002. Worse, BPA has proposed substantially cutting its fish and wildlife spending over the next several years.

It appears that a lack of funding in the first two years of the plan will prevent the Salmon Plan from being adequately implemented. Funding is particularly lacking for some of the most important parts of the Salmon Plan, such as habitat and hatchery improvements. **(All RPA Actions) FAIL**

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Conclusion

This report documents the federal government's failure to implement its plan to protect and restore salmon and steelhead in the Columbia and Snake River Basin. In 2002, as in 2001, the government completed less than 30% of the Salmon Plan's required measures. Two years into its ten-year plan, the federal government is woefully behind schedule.

We thus enter the third year well behind in every "subject," especially the most important ones: restoring healthy habitats in and along the Columbia and Snake rivers, their tributaries, and the Columbia River estuary. These delays and failures to implement the Salmon Plan in its first two years will, unless dramatically reversed, prevent a healthy return of Northwest salmon and steelhead, and the communities and cultures that rely upon them.

In these same two years, the Northwest experienced adult salmon returns higher than seen in years. These mostly hatchery-based returns give us a glimpse of the community and economic vitality that healthy salmon can provide the Northwest. They also mask the dangers salmon still face and provide an excuse for inaction. Scientists tell us the higher returns are due to a favorable turn in ocean cycles and past high water years.

But we cannot rely on Mother Nature to fix the harms we have created; good ocean conditions and high water years come and go. We must take responsibility for our actions and take the steps necessary to protect and restore this national treasure for future generations.

The current Salmon Plan's approach to protect and restore salmon and steelhead is suspect. An independent


group of scientists said upon reviewing the Salmon Plan that it "would require a level of cooperation that has never before been achieved" within the federal government and "assume[s] that details will be worked out sometime in the future in spite of the fact that it has not been possible to work them out in the past." This report shows that this judgment was prophetic.

After two years and more than one billion dollars spent, we see little return on the investment. Given the

"[The state of] Washington faces important challenges, and there's no greater challenge than to save salmon... For all of us, those fish are a wonder of nature and they must be preserved."

— Then-Candidate George W. Bush, 2000

Bush Administration's recent decisions to reduce 2003 salmon funding outright, the pattern seems unlikely to change.

In September 2003, the federal government will formally review its progress on the Salmon Plan. If implementation is deemed insufficient, stronger recovery options, such as partial dam removal, must be re-examined. This report and its predecessor starkly document the insufficiency to date. It is both prudent and wise to at least prepare for a new course — a science-based and economically stimulative course that includes partial removal of the four lower Snake River dams. 

“There is a fire in water. There is an invisible flame, hidden in water, that creates not heat but life. And in this bewildering age, no matter how dark or glib some humans work to make it, wild salmon still climb rivers and mountain ranges in absolute earnest, solely to make contact with that flame.”

— David James Duncan, *A Prayer for the Salmon’s Second Coming*



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With a combined membership of over 6 million, Save Our Wild Salmon (SOS) is a nationwide coalition of conservation organizations, commercial and sportfishing associations, businesses, river groups, and taxpayer advocates working collectively to restore healthy and abundant wild salmon to the rivers and streams of the Pacific Northwest.

For more information about Save Our Wild Salmon or the contents of this report please contact:

Save Our Wild Salmon
2031 SE Belmont Street
Portland, OR 97214
phone: 503-230-0421
fax: 503-230-0677
www.wildsalmon.org