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temperature improvement measures contained in this program will have a substantial impact on the operations of this system.

Given more time and experience, it is likely that the following measures can be refined, resulting in greater operational efficiency and better coordination between the needs of fish and other uses of the river.

The Council welcomes proposals from river operators, especially those proposals that emerge from the river operations process described below, for better ways of providing equivalent amounts of water for salmon and steelhead within time frames specified in this program. Any such proposals should be submitted to the Council and, on approval, implemented.

The Council expects that river operation changes for fish will be in accordance with the following measures as they are now written. The Council will carefully monitor these operations and will welcome suggestions from all interested persons on how they can be improved. Each year, until further notice, the Council will review the operations. At that time, it will determine whether these measures should be revised to provide the intended benefits to fish in the most practical and efficient manner.

5.1A Fish Operations Executive Committee

Fish Operations Executive Committee

Council

5.1A.1 Initiate an annual policy and technical process to address flow and temperature regimes and reconcile measures described below to protect salmon and steelhead. The process will be managed by the Fish Operations Executive Committee, which will be appointed by the Council and made up of senior management representatives of the Council, as well as power and fishery interests.

5.1A.2 The Committee should produce a detailed, annual implementation plan for carrying out its work. The committee should produce the operating plan by March 31 of each year and will need to begin in the preceding year to complete its work. Insofar as practical, the committee should consider matters such as spill, transportation, the Corps' Fish Passage Plan, the fishery agencies and tribes' Detailed Fishery Operating Plan, recommendations from the Ad Hoc Committee of the Columbia Basin Fish and Wildlife Authority, the coordinated plan of operation for flow augmentation (Section 5.1C), annual operating plans for the Non-Treaty Storage Fish and Wildlife Agreement, planning for coordinated system operations, Idaho Power Company's proposed operations under its weak stock plan, water identified by the Snake River Anadromous Fish Water Management Office, spring and fall trade-offs, research and monitoring results and other mainstem passage matters.

In its meetings, the committee should identify all water available in a particular year and plan for its use consistent with Council specified reservoir constraints and anadromous fish measures. During low flow conditions when the monthly average flow equivalent¹ of 85,000 cubic feet per second in the Snake River cannot be provided for the full migration period, flows should be distributed to protect a portion of all known naturally reproducing stocks. The plan will have the flexibility to move flows between May and June, if such shaping is more likely to achieve the intent of this

¹ "Flow equivalent" means the flow level required to achieve the same water particle travel time as 85,000 cubic feet per second at average normal pool elevations at all projects. For example, 81,000 cubic feet per second at minimum operating pool elevations is the flow equivalent of 85,000 cubic feet per second at average normal pool levels.

program. If there are conflicting water demands among anadromous species, conflicts should be resolved by the Fish Operations Executive Committee in consultation with the National Marine Fisheries Service. In resolving conflicts, the committee should carefully consider the value of retaining cold water in the Dworshak project to help control temperatures for Snake River fall chinook returning adults.

All alterations in river operations undertaken pursuant to these amendments should consider impacts on resident fish and other species, especially threatened, endangered or native species, and should seek to avoid adverse effects on them.

- 5.1A.3 Develop a procedure to address fish flow operations throughout the migration season, if necessary.
- 5.1A.4 Develop accounting procedures for the use of this water. These procedures will be provided to the Council and other interested parties. Pending development and Council approval of new accounting rules, the provisions set out below (Section 5.1D) will continue to apply. All water supplies acquired under the measures below will be applied to the fish migration.
- 5.1A.5 Manage water supplies for fish in accordance with the annual implementation plan. To assist the full range of stocks migrating in the Snake and Columbia rivers, every effort must be made to shape water stored for fish flow augmentation to the fullest extent practicable. Any proposed deviations from the implementation plan must be approved by the Fish Operations Executive Committee.
- 5.1A.6 In developing the annual implementation plan, the committee shall specifically evaluate tradeoffs between flows needed for anadromous fish and reservoir

operations needed to protect resident fish and wildlife in Columbia Basin storage reservoirs that are federally operated, licensed or regulated.

5.1B Fish Passage Center

Bonneville

5.1B.1 Fund the establishment and operation of a Fish Passage Center, including funds for a fish passage manager position, technical and clerical support and the services of consultants when necessary, as jointly agreed by Bonneville and the fish and wildlife agencies and tribes. This support will assist the fish passage manager in:

- 1) ensuring that anadromous fish, resident fish and wildlife are protected, mitigated and enhanced;
- 2) planning and implementing the annual smolt monitoring program;
- 3) developing and implementing flow and spill requests as related to the water budget volumes, spill criteria and flow targets in the Council's fish and wildlife program;
- 4) coordinating storage reservoir and river operations and evaluating potential conflicts between anadromous and resident fish to ensure that Council-adopted operating criteria for storage reservoirs are met when considering system operational requests;
- 5) identifying when conditions allow for operations in excess of minimum objectives and criteria, so that this situation can be brought to the attention of relevant decision-makers to allocate the operational flexibility to maximize benefits for anadromous fish, resident fish and wildlife;
- 6) monitoring and analyzing research results to assist in implementing the water budget and spill planning and in preparing reports; and

- 7) monitoring and analyzing monitoring and research data to assist in implementing storage reservoir

operating criteria and to better provide for the needs of anadromous and resident fish and wildlife.

- 5.1B.2 Provide funds to establish a “fish passage manager” position designated by the federal and state fish and wildlife agencies and the Columbia River Basin Indian tribes. The fish passage manager will provide expert assistance to the designated entities in working with the power project operators and regulators to ensure that the Council’s program requirements for fish are made a part of all river system planning and operations. The fish passage manager will be selected for knowledge of the multiple purposes of the regional hydropower system and of the water needs of fish and wildlife, as well as the ability to communicate and work with the fish and wildlife agencies, tribes, project operators, regulators and other interested parties, including members of the public. The fish passage manager will be selected by members of the Columbia Basin Fish and Wildlife Authority and report to the Authority’s executive director. The fish passage manager and the executive director will report as needed and at least annually to the Council on any issues that are raised regarding the Center’s operations, including communications with the fish and wildlife agencies, tribes, project operators, regulators and members of the public. The Council will provide a fish passage advisor on its staff to review the operation of the water budget, to advise the Council on all matters related to fish passage and to assist in resolving fish passage disputes.

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Relevant Parties

5.1D.2 The Council recognizes that the description of the water budget lacks many of the operating details that will be addressed as the water budget is implemented and operating problems occur. Recognizing that operating decisions could influence the effectiveness of the water budget, the Council recommends priorities for competing uses of the hydropower system. Relevant parties should rely on these priorities in their decisions about the hydropower system.

- First: Firm power to meet firm loads.
- Second: Water budget and other flow measures and reservoir constraints.
- Third: Reservoir refill.
- Fourth: Secondary energy generation (beyond that provided in connection with use of the water budget).

5.1D.3 Implement flow augmentation measures within the context of laws related to federal, state and Indian water rights. (See Section 14: Disclaimers.)

5.1D.4 Beginning in 1995, evaluate alternative ramping rates for flow fluctuations at mainstem Snake and Columbia River dams to constrain reductions or increases in total flow per 24-hour period at these projects.

5.2 IMPROVE SNAKE RIVER FLOW AND VELOCITY

Biological objectives:

1) To improve conditions for salmonid production by increasing flow and water velocities, decreasing downstream migration time for anadromous fish and decreasing the quantity of habitat for predatory and competing fish species; and 2) to endeavor to provide inriver conditions to maximize adult fish survival between dams.

Operational objectives:

To endeavor to provide a minimum monthly average flow or velocity equivalent of 85,000 cubic feet per second in all water years, endeavoring to achieve a monthly average flow or velocity equivalent of 140,000 cubic feet per second at Lower Granite at full pool from April 10 through June 20 in all water years. From June 21 through July 31: the objective is to provide a monthly average flow equivalent of 50,000 cubic feet per second and to exceed this flow target in years of higher runoff.

5.2A Performance Standard: Snake River Spring Migrants

Incorporate the measures described below into firm power planning.² Figure 5-1 illustrates the approximate flow equivalent attained when these measures are applied to the historical water record.

Bonneville, Corps of Engineers, Bureau of Reclamation and Other Parties

5.2A.1 Operate the Dworshak Reservoir to improve salmon migration conditions consistent with the measures listed below:

- From January 1 to April 10, in years when Snake River runoff is forecast to be below average, shift system flood control storage space to other Columbia Basin projects.

² Where the Council calls for incorporation of flow or other measures into firm planning, the Council means that the federal project operators and regulators incorporate these measures in all system planning and operations performed under the Columbia River Treaty, the Pacific Northwest Coordination Agreement, and in other applicable procedures affecting river operations, and all parties will act in good faith in implementing these measures as firm requirements.

5.4A Performance Standard: Columbia River Spring Migrants

Through firm power planning, provide 58 thousand cubic feet per second per month (3.45 million acre-feet) of shapeable water. In addition, provide up to 4 million acre-feet of water, subject to conditions specified below. Add to the 4 million acre-feet any additional water from Canadian storage reservoirs that can be dedicated to anadromous fish flows as a result of negotiations and discussions with Canada.

Bonneville, Corps of Engineers, Bureau of Reclamation and Other Parties

5.4A.1 Beginning immediately, operate John Day Reservoir at minimum irrigation pool from May 1 to August 31 of each year. Minimum irrigation pool is the lowest level at which the irrigation pumps drawing from the reservoir will operate effectively. Monitor and evaluate the biological benefits of John Day Reservoir operations so that the Fish Operations Executive Committee can determine in future years how the operations can complement flow velocities and other factors to achieve rebuilding targets. The Council recognizes

that, as was the experience in 1991, under certain conditions a slightly higher elevation may be required and that some daily flexibility is necessary for operation of the reservoir. Other portions of this rule contain measures that will permit irrigators and other users of the John Day pool to operate effectively at lower pool levels. The Council expects the level of the minimum irrigation pool to be lowered as these measures are implemented and that this will be accomplished by 1994. The intent of this provision is that the John Day Reservoir will be operated at the lowest practical level during the spring and summer migrations of juvenile chinook and sockeye salmon.

5.4A.2 Through firm power planning, provide 58 thousand cubic feet per second per month (3.45 million acre-feet) of water at Priest Rapids Dam to be used by the Fish Passage Center consistent with the Fish Operations Executive Committee's annual plan during the period April 15 through June 15.

5.4A.3 When the adjusted April forecast for the January-July runoff at The Dalles Dam is less than 90 million acre-feet, have water in storage and available for juvenile fish flow augmentation by April 30. The appropriate volume is derived from the curve in Figure 5-2 based

on the official April forecast and adjusted
to the National Weather Service 95-

percent confidence level. This volume

Bonneville

5.4A.9 Because of the uncertainty in the supply of out-of-region energy, immediately secure options for one or more resources to augment reduced hydroelectric energy during winter months. If the region is unable to store enough water for any reason other than those specified in Section 5.4A.4, above, immediately begin to acquire the optioned resources called for under Objective 2 of the 1991 Northwest Conservation and Electric Power Plan, or otherwise acquire resources that are consistent with the plan, in an amount sufficient to ensure that the full volume of required water is available in succeeding years. The Council will consult with representatives from all interested parties to determine the proper amount and timing of the acquired resource(s).

5.4B Summer Migrants

Bonneville

- 5.4B.1 During July and August in below-average water years, provide a volume of water from the U.S. Non-Treaty Storage water available in that year to facilitate evaluations described below.
- 5.4B.2 Continue to seek energy exchanges and other energy alternatives with a potential for increasing Columbia River flows in July and August to facilitate evaluations and to improve survival of summer migrants.
- 5.4B.3 [deleted]

Council

- 5.4D.2 In consultation with and approval of the fishery agencies and tribes, immediately undertake a basinwide comprehensive hydrologic, hydraulic geometry and biological analysis to determine appropriate flow duration and magnitude needed to reestablish critical mainstem and estuarine floodplain habitat. As part of the analysis, explore relation of flood control rule curves, as provided in Section 5.4E, and modification of power sales contracts to move the river hydrograph back toward historical timing and duration.

Bonneville

- 5.4D.3 Fund the evaluation in 5.4D.2.
- 5.4D.4 Fund an evaluation of all Columbia River Basin water storage and hydropower facilities to determine the availability of additional velocity improvements or water for mainstem or tributary flow augmentation. The evaluation should include resident fish or other potential endangered species status and impacts. Report to the Council by January 1, 1996.

U. S. State Department

- 5.4D.5 Initiate discussions with Canada to attempt to secure the use of additional water for flow augmentation from Canadian storage reservoirs. Attempt to reach agreement by December 31, 1996. Report findings or progress to the Council at the end of each year.

Bonneville, Corps of Engineers and Bureau of Reclamation

- 5.4D.6 Use any resulting water secured through negotiations with Canada to meet the flow objectives of this program and, in addition, to provide a minimum flow of 120

thousand cubic feet per second at The Dalles Dam during September. These flows should: decrease the migration time of the end of the juvenile subyearling fall chinook migration through the lower Columbia; reduce delay and inter-dam loss, and increase spawning success for adult fall chinook migrating through the lower Columbia; and reduce delay and inter-dam loss, and increase spawning success for adult fall chinook and steelhead.

Corps of Engineers

- 5.4D.7 Maintain Lake Pend Oreille at a level no lower than elevation 2,054 feet, 2,055 feet and then 2,056 feet during the next three winters, which will provide an additional amount of water for Columbia River salmon flows (see Section 10.6E). Any replacement energy for this operation must not come from Columbia River Basin storage projects.

Bureau of Reclamation, U.S. Geological Survey, U.S. Department of Agriculture and Soil Conservation Service

- 5.4D.8 Evaluate the potential for water conservation, water efficiency or other measures in the above-listed agency programs with the most potential to benefit anadromous fish and with the least impact on third parties. Include an evaluation of the potential for using crop rotation programs to facilitate dry-year water leasing activities. Report to the Council.

Bonneville, Corps of Engineers and Bureau of Reclamation

- 5.4D.9 Under the auspices of the Columbia River Water Management Group, continue with the review of, and make recommended improvements to, the

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