Preparation for

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CHAPTER 3 – COMPARISON OF ALTERNATIVES

- **Explains how the five basic Policy Direction alternatives were developed** and how decisions on those alternatives can be made.
- **Identifies the key regional issues** that help to determine the scope of any Policy Direction.
- **Describes and compares the Policy Directions (including the BPA Preferred Alternative—PA 2002) as to intent and effect.** These Policy Directions are based on the many options that have been or continue to be discussed in the ongoing processes within the BPA service territory and Columbia River Basin. The Policy Directions are compared against the Status Quo (No Action). The comparison for the overall Policy Directions is based on the more detailed discussion and analysis in Chapter 5 (Environmental Consequences) and, for PA 2002, in Section 3A at the end of this Chapter.
- **Provides ways for the public and the decisionmaker to modify, extend, or create new Policy Directions** to meet particular needs or desired ends, and to determine potential environmental consequences of those changes.

Refresher: *The items below are summarized from Chapters 1 and 2 to provide an easy reference for the reader as he or she moves through this important chapter.*

(1) Many Northwest residents appear to support the concept of diverse and healthy populations of fish and wildlife and other valued natural resources. However, regional decisionmakers have been unable to reach agreement on a plan that protects the environment, meets the other needs of the Region, and under which they can all act consistently to implement its measures.

(2) Conflicting laws and legal mandates have caused inconsistencies in the efforts to take actions to protect and enhance fish and wildlife in the Region. The resulting mitigation and recovery policy has not been as coordinated and consistent as BPA needs.

(3) A unified planning approach is needed, but it is not yet clear what it should or will look like now and in the future. Many different approaches are possible. The resolution lies in (1) a broad regional acceptance of a comprehensive, consistent, and workable plan, and (2) a regional acceptance of the fact that this plan may need to be altered or modified over time.

(4) Several regional plans and processes, either completed or ongoing, have been designed to address fish and wildlife mitigation and recovery efforts. These include the following:

- *the Federal Caucus and the Conservation of Columbia Basin Fish: Final Basinwide Salmon Recovery Strategy (Basinwide Strategy), which helps guide*

those Federal actions and interactions with state, tribes, and local governments that relate to anadromous fish;

- *NMFS and USFWS Biological Opinions (BiOps) for fish and wildlife issued under the ESA);*
- *salmon (and other species) plans that were crafted by the four Northwest states and several of the Region's Native American tribes;*
- *Governors' Plans such as the document produced by the Governors of Idaho, Montana, Oregon, and Washington ("Recommendations for the Protection and Restoration of Fish in the Columbia River Basin"[1]) which advocates a healthy, functioning ecosystem while preserving a sound economy in the Pacific Northwest;*
- *the Council's completed Multi-Species Framework and ongoing Fish and Wildlife Program Amendment Process, both of which focus on long-term river management options and conservation of multiple species; and*
- *BiOp Implementation Plans: Given the 10-year duration of the NMFS and USFWS BiOps and the over 200 specific actions that they call for, the Action Agencies—the Corps, Bureau, and BPA—annually prepare 1 and 5-year Implementation Plans. As part of the public process for these Plans, the Action Agencies are proposing to annually conduct a series of workshops with regional entities in an effort to include broad input into their Implementation Plans. The Implementation Plans include actions that have already received or will receive environmental review before they are implemented.*

An illustration of the scope of several of these plans and processes as they relate to each other and to this EIS is shown in Figure 1-3.BPA, as well as other Federal, State, and local entities, is responsible for funding certain fish and wildlife mitigation actions and recovery efforts that are determined by regional policy decisions.

(6) BPA is preparing this EIS now because (a) many species and stocks of fish and species of wildlife are already considered by many in the Region to be in poor condition; (b) BPA wants to be ready to implement current and future fish and wildlife mitigation and recovery efforts without delay as a Policy Direction is chosen or changed; and (c) irrespective of efforts to achieve a unified plan, BPA has an ongoing obligation to fund appropriate fish and wildlife mitigation and recovery measures. This document provides the necessary NEPA documentation to inform policy-makers and the public of the potential consequences of these choices.

(7) Now, and in the future, BPA must be prepared to answer specific questions about its actions, compare them against the regional policy decisions, and then determine whether the proposed actions are consistent with the regional Policy Direction being implemented. BPA will proceed with its mission to implement and fund its portion of the fish and wildlife mitigation and recovery effort when it has fully examined these considerations.

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[1] Governors, Pacific Northwest States 2000.

(8) The Federal Caucus, Council, tribal and state plans, and other related processes will help BPA to make such decisions. However, these processes did not provide environmental documentation or public process for the full range of alternatives as required by law (NEPA). Selection of a Policy Direction to begin implementing actions will lead to environmental consequences that must be evaluated and to potential mitigation for adverse effects that must be considered. This document intends to provide NEPA coverage for a broad range of possible Policy Directions and related implementing actions.

3.1 DEFINING AND DECIDING ON THE ALTERNATIVES

➢ **This section describes how the many regional processes and ideas on fish and wildlife mitigation and recovery were considered, how a range of alternatives was defined, and how a qualitative or "relationship" analysis (not specific calculations) was used to help compare the alternatives in terms of environmental consequences.**

The alternatives in this EIS are framed as *Policy Directions*: unified regional planning approaches that focus on different themes. Themes are characterized by commonly held philosophies, values, and key issues. The descriptions of the different themes reflect BPA's attempt to capture the major differences underlying the many approaches throughout the Region for fish and wildlife policy. *None of the individual Policy Directions are intended to represent any particular group's, organization's, or individual's position, and none represent BPA's specific position as to fish and wildlife mitigation and recovery*. However, the descriptions do provide a means to evaluate the environmental consequences of moving toward one of the Policy Directions. (The Policy Direction approach that existed before 2002 represents the No Action, or Status Quo, which is not a unified planning approach but which serves as the baseline for comparative analysis).

> ***Policy Direction:*** *the overarching theme that guides and shapes the decisions made by governments, agencies, or other public bodies regarding fish and wildlife mitigation and recovery efforts, applied through a series of actions that form an implementing plan.*

Each Policy Direction represents a shift toward one of the themes with more actions and increased intensity of actions taken consistent with that theme. The exact actions taken under each Policy Direction, and the precise intensity of those actions, are generally not established at this time. Rather, existing actions not consistent with the Policy Direction, especially those in conflict with the new Direction, would likely be scaled back or eliminated. Actions consistent with the Policy Direction would be specified and analyzed in greater detail before being implemented, as appropriate. Sample Implementation Actions for each of the Policy Directions are shown in Volume 3.

There are ethical, political, environmental, legal, and scientific implications and trade-offs involved in selecting a particular Policy Direction for fish and wildlife mitigation and recovery. Many questions must be considered: How expensive will our energy be? Where will we be able to live, work and play? Who will have the right to fish? What will happen to our jobs? Science can help evaluate the consequences of different Policy Directions—but resource management issues are ultimately issues of law, policy, and public choice. The question is: how best to arrive at that choice?

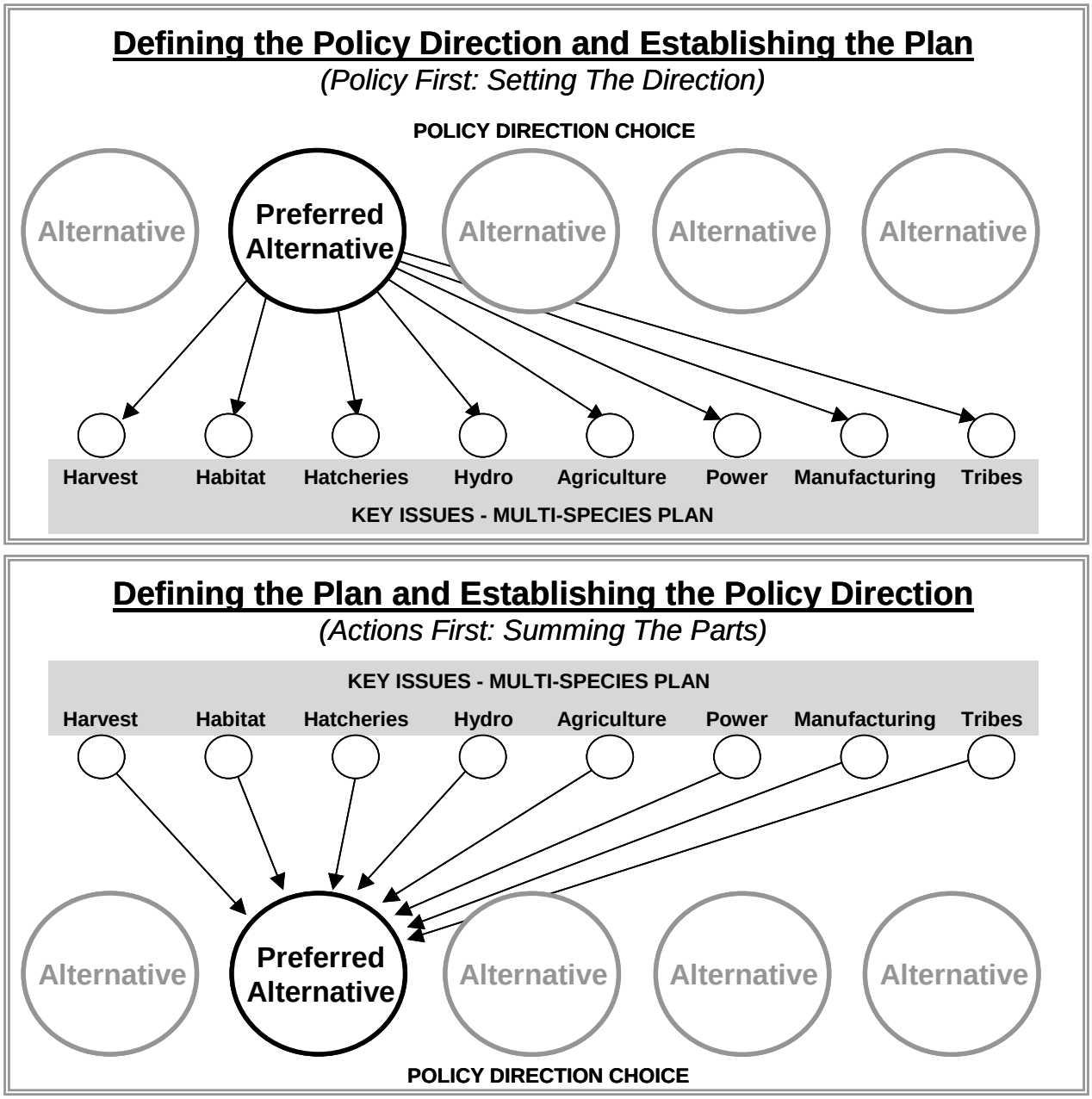
It is important to bear in mind that there is no one "best" Policy Direction. "Best" is a value judgment, ultimately a matter of personal preference. However, one may evaluate whether certain actions are more or less likely to bring about certain ends. For instance, if a goal is to improve habitat for fish, then keeping human and livestock activity away from a section of riverbank will help stabilize riparian vegetation, will slow erosion into the stream, and will improve the quality of the water. On the other hand, if the goal is to improve the well-being of people in the Region, there may be unavoidable trade-offs among groups of people that cannot be reconciled on the basis of factual information alone. Some factual matters can be evaluated where personal values cannot. This EIS tries to emphasize factual matters, while revealing the trade-offs between different resources.

There are certain laws that an alternative must comply with to be viable. These laws include the ESA, the Regional Act, and the CWA. However, this is a forward-looking policy-level EIS. As such, BPA has not limited the analysis to existing conditions or legal authorities. Through scoping, we found many suggestions for alternatives that would require BPA (or others) to receive new legal authority for implementation. If scoping or comments on the Draft EIS provided suggestions for an alternative that reflected a reasonable, focused, clearly articulated rationale, then we incorporated either that alternative or its actions into this EIS. Consequently, not all of the alternatives examined are within BPA's current authority to implement. However, this could change if, over time, the applicable laws were to change.

3.1.1 Defining Regional Public Policy

There are two basic ways to define a regional Policy Direction for fish and wildlife mitigation and recovery efforts: begin with a policy and define the actions to carry it out (policy first: setting the direction) or define the actions and then decide what policy they imply (actions first: summing the parts). Figure 3-1 shows how both would work.

Figure 3-1: Different Ways to Establish Policy Direction



- **Define the Policy First:** One may choose to define the policy first (set the direction), and then use that policy as guidance in setting up an implementation plan of actions to carry it out. This approach would be more likely to achieve consistency among different activities because everyone has to reach agreement on the Policy Direction *first*. Individual groups would have more control over their programs and decisions and the freedom to implement their own action plans as long as those plans were consistent with the overall Policy Direction selected. Only in those less frequent cases when specific group actions come into conflict, would coordination with other regional groups be necessary. This coordination

would be done to avoid conflicts and achieve consistency in policy implementation.

- **Define the Actions First:** One may choose to develop a set plan of actions, and then sum up its "parts" to arrive at the Policy Direction. This approach might appear more flexible in terms of accommodating individual efforts now underway. However, it would not have the necessary coordination up front to assure consistency. Groups could tie up a lot of time trying to coordinate very specific, individual decisions; they might end in unresolved conflicts over implementation because so many people with different authorities and perspectives are involved at the action plan level. In fact, the implementing actions could end up at cross-purposes.

This EIS uses the "policy-first" approach because a coherent, unifying policy is needed to avoid inconsistent sets of actions. Also, the policy-first approach allows the reader to review the large number of possible implementing action plans through a reasonable and manageable number of Policy Directions.

We recognize that regional decisionmakers may not be able to agree upon a unified planning approach—they may instead choose to implement actions independently. By comparing the Region's implementation actions with the Sample Implementation Actions (see Volume 3), the Administrator and others may determine *which* of the Policy Directions (or combination of Policy Directions) the regional actions most closely resemble. The "relationship analysis" used in this EIS (see Section 3.1.6, below) will permit the BPA Administrator to evaluate that Policy Direction and understand the overall environmental consequences of funding and implementing it before determining whether it is the most appropriate Policy Direction for BPA. Once a determination has been made, BPA can implement a consistent, comprehensive, long-term fish and wildlife mitigation and recovery program.

This FWIP EIS evaluates the broadest possible range of alternatives. Such an approach also anticipates changes over time and extends the usefulness of the EIS. This EIS provides the flexibility to respond to changes in the natural, social, and economic environments, and provides by modifying, extending, or creating new Policy Directions. This EIS also provides for the assessment of the environmental effects of those Policy Directions. (See Chapter 4.)

3.1.2 Source for the Alternatives

To help define the alternative Policy Directions in this EIS, many regional processes were evaluated. We closely studied the proposals submitted (see Section 1.3.3 and Appendix D) by all the major participants (Section 1.3.1), reviewed the many ongoing and recently completed processes (Section 1.3.2), and identified the key issues (Table 3.1-1), then grouped ideas together by their overall theme. "Sorting" the proposals in this way makes it easier to understand how the different regional processes fit together. Although each regional proposal may represent a unique set of actions, each can be

categorized as falling generally under one or more of the major Policy Direction(s) for fish and wildlife mitigation and recovery (see Appendix I).

Key Issues identify resources and human activities of concern that need to be addressed in considering both actions and environmental consequences. They help to identify both the implementation actions that could be taken under each of the Policy Direction alternatives described in Section 3.2 and the environmental consequences that may result.

The Key Issues determine the questions being addressed by the processes and the shape of the Policy Direction alternatives, including the Preferred Alternative (PA 2002). They were first identified during one of the initial regional processes in November 1998. The Multi-Species Framework held a three-day workshop, convening numerous groups from throughout the Region to consider fish and wildlife mitigation and recovery. Participants included representatives from the tribes and state and Federal governments, as well as from commercial interests, private interests, and environmental groups. These participants identified numerous key issues as critical for resolution.

As the Framework process continued and the Federal Caucus was formed, more key issues surfaced and the categories were combined and refined. Over 40 key regional issues are listed in the table below, divided by area of focus. The issues have been numbered for convenient cross-reference with Volume 3 (Sample Implementation Action Tables).

This EIS is intended to guide BPA's implementation and funding of fish and wildlife mitigation and recovery efforts. Therefore, the actions listed in the Sample Implementation Action Tables focus on fish and wildlife. However, these tables also highlight issues unique to commercial groups and tribes. Like Federal and state agencies, commercial interests may take actions in fish and wildlife mitigation and recovery, but they must reconcile these efforts with the need to respond to market constraints and pressures. Thus, commercial interests face issues not shared by other participants in fish and wildlife recovery and mitigation efforts. The Region's tribes also take actions in fish and wildlife recovery and mitigation, and participate in commercial activities where they face the same economic pressures as non-tribal commercial interests. In addition, tribes ascribe a spiritual significance to fish and wildlife that must be factored into policy decisions by Federal and state agencies and commercial interests. Tribal concerns about culture, history, health, and sovereignty are directly connected to the condition of the Region's fish and wildlife—a relationship unique to tribes and one that may generate actions not undertaken by other groups.

Table 3.1-1: Key Regional Issues

Key Regional Issues		
1 Habitat	**4 Hydro**	**7 Transportation**
1-1 Anadromous Fish	4-1 Dam Modifications and Facilities	7-1 Navigation and Barging
1-2 Resident Fish	4-2 Hydro Operations	7-2 Trucking, Railroads and Infrastructure
1-3 Introduced Species	4-3 Spill	**8 Agriculture**
1-4 Wildlife	4-4 Flow	8-1 Irrigation
1-5 Predators of Anadromous Fish	4-5 Reservoir Levels	8-2 Pesticides and Agricultural Practices
1-6 Watersheds	4-6 Water Quality	8-3 Grazing
1-7 Tributaries	4-7 Juvenile Fish Passage and Transportation	8-4 Forestry
1-8 Mainstem Columbia	4-8 Adult Fish Passage	**9 Commercial Harvest**
1-9 Reservoirs	4-9 Flood Control	**10 Residential and Commercial Development**
1-10 Estuaries and Ocean	**5 Power**	**11 Recreation**
1-11 Water Quality	5-1 Existing Generation	**12 Tribes**
2 Harvest	5-2 New Energy Resources	12-1 Tribal Harvest
2-1 Anadromous Fish	5-3 Transmission Reliability	12-2 Tradition, Culture, Spirituality
2-2 Resident Fish	**6 Industry**	
2-3 Wildlife	6-1 Industrial Development	
3 Hatcheries	6-2 Aluminum and Chemical	
3-1 Anadromous Fish	6-3 Mining	
3-2 Resident Fish	6-4 Pulp and Paper	

3.1.3 Correlating the Alternatives and the Regional Processes

The work of reviewing and extracting from the regional processes and key issues resulted in defining the Status Quo and identifying five basic Policy Direction alternatives along the entire spectrum of potential Policy Directions. Such a wide range would ensure a thorough analysis of BPA's fish and wildlife obligations, and would permit BPA and others to act quickly in implementing the necessary actions for fish and wildlife mitigation and recovery in the Region.

Two tests of the usefulness of the range of Policy Directions defined for this EIS are their **comprehensiveness** and **flexibility.**

The alternatives are comprehensive. The Council's Multi-Species Framework alternatives and Concept Papers, the Federal Caucus' Conceptual Plan and Basinwide Strategy, the 2000 Amendments to the Council's Fish and Wildlife Program, the Federal Caucus Options, the 2000 Biological Opinions, the System Operation Review, the Corps'

Lower Snake River Juvenile Salmon Migration Feasibility Study and FEIS, the Governors' Recommendations, and the tribal and regional plans form an essential and comprehensive database of information and ideas that was used to define the range of Policy Direction alternatives for this EIS. Additionally, the hundreds of Sample Implementation Actions that accompany each Policy Direction were assembled directly from the many proposals, programs, and plans generated by regional processes. Volume 3 shows the types of actions that might be taken under each of the Policy Directions in this EIS.

The alternatives are flexible. The Policy Directions and Sample Implementation Actions were designed to be broad enough to accommodate current and future efforts for fish and wildlife mitigation and recovery within the Columbia River Basin (including the BPA service territory). They were also designed to cover a wide spectrum of issues.

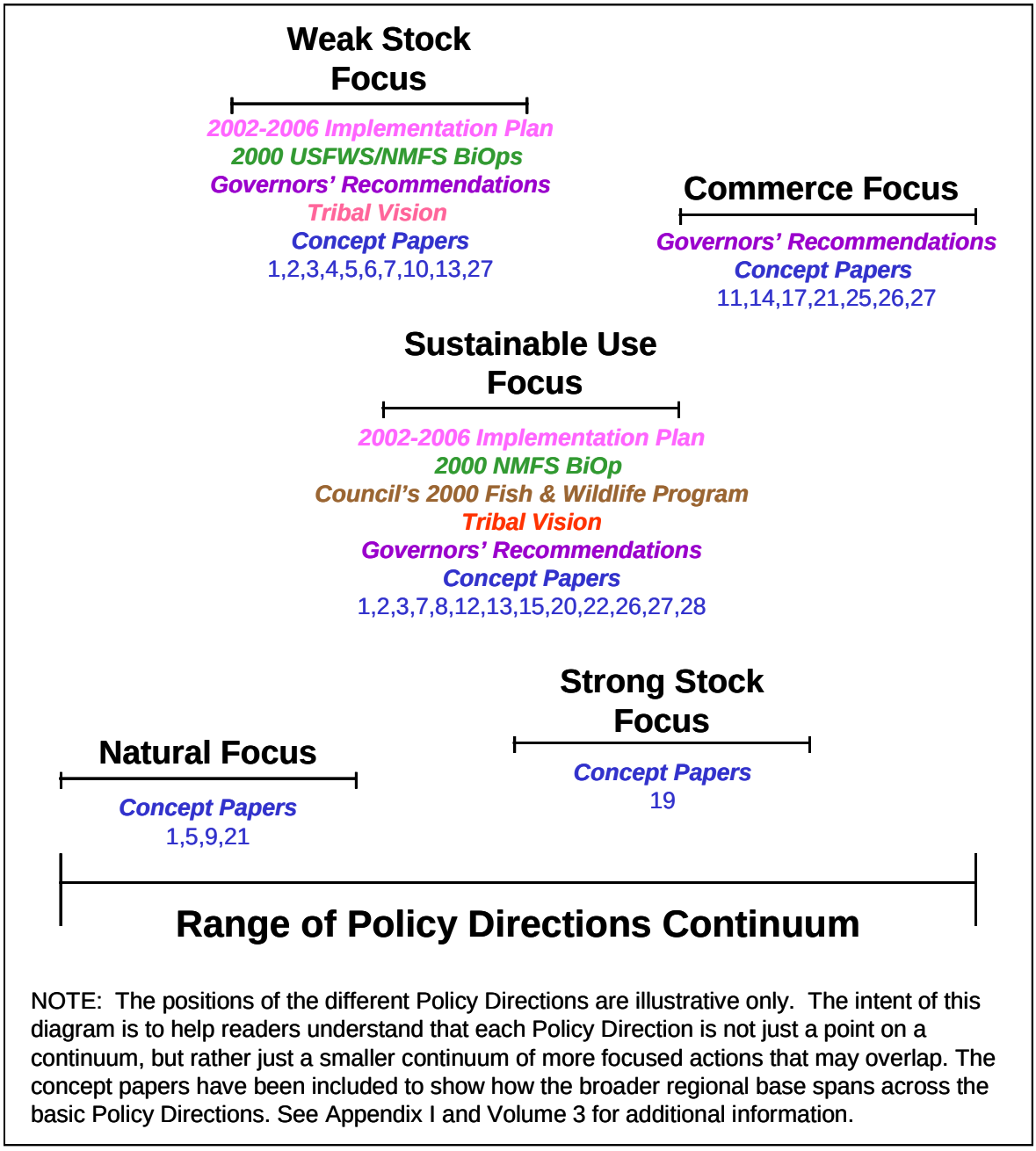
Other ways to approach the analysis could have been selected. However, given the broad range of possible alternatives and the huge volume of information, we believe that the selected approach and the associated analysis are the most understandable, practical, and reasonable means to accomplish the task.

Figure 3-2 illustrates the general grouping of several major regional proposals under each of the five base Policy Direction alternatives. Note that some proposals may fit under more than one Policy Direction. For more detail on the "shorthand" references in the figure, please see Appendices D and I.

3.1.4 Integrating BPA's Decisionmaking Process with the Regional Processes

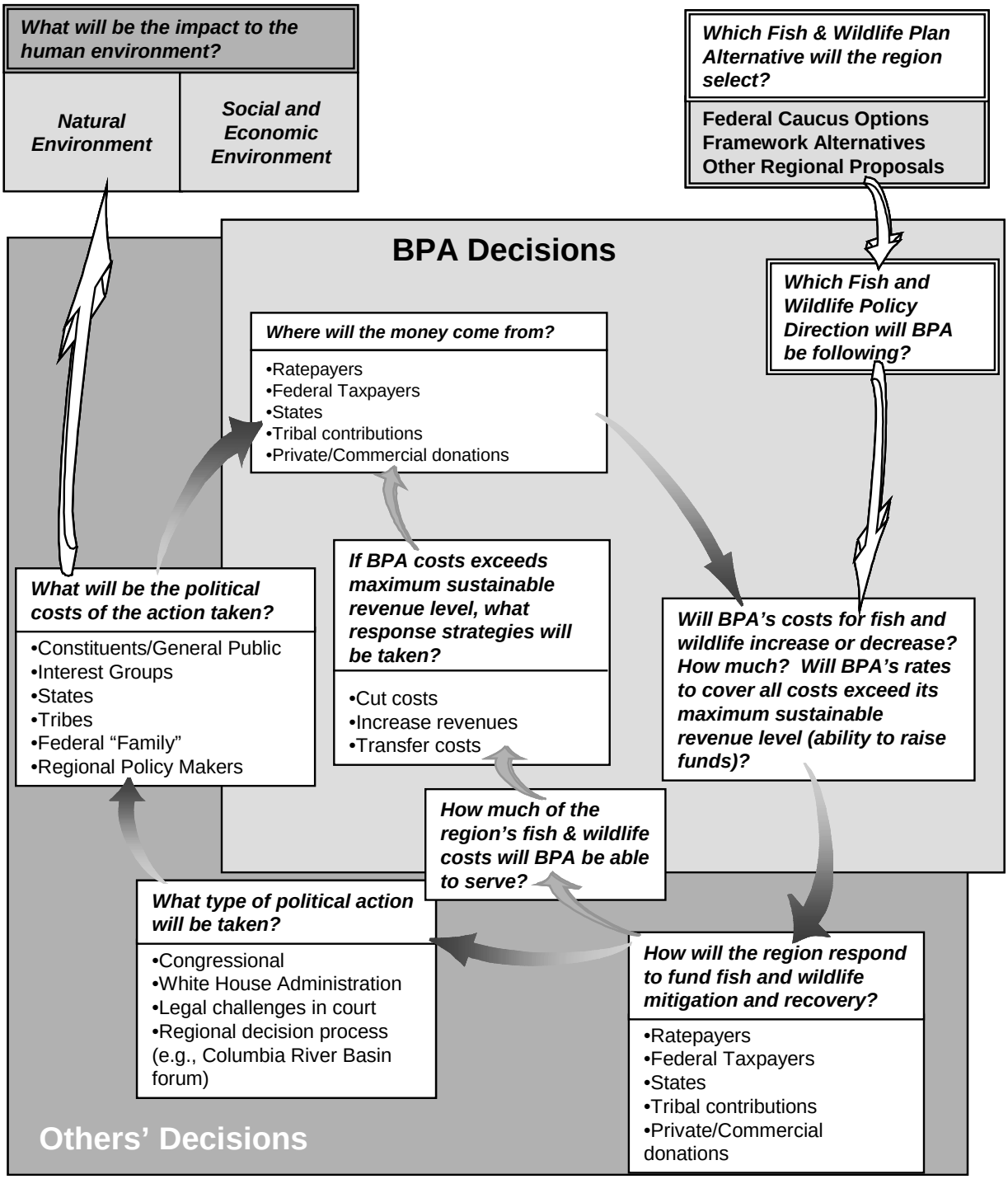
As noted above, data and information from a wide range of regional plans and processes have been integrated into this analysis and have helped to define the range of Policy Directions in this EIS. Ultimately, BPA must decide which alternative will guide its implementation and funding of fish and wildlife mitigation and recovery efforts now and in the future. However, these decisions are not made in a vacuum. Comments and guidance from other Federal and state agencies, tribes, interest groups, and the general public are critical to this process. (Figure 3-3 shows how BPA's decisionmaking is integrated into regional processes.) A fundamental purpose for selecting from the Policy Directions is to promote coordinated, efficient, and consistent fish and wildlife mitigation and recovery efforts by considering potential actions in relationship to an overarching policy over time. See Section 3A below for BPA's identification and discussion of its current Preferred Alternative Policy Direction (PA 2002).

Figure 3-2: Illustration of Major Regional Processes and Policy Directions



NOTE: The positions of the different Policy Directions are illustrative only. The intent of this diagram is to help readers understand that each Policy Direction is not just a point on a continuum, but rather just a smaller continuum of more focused actions that may overlap. The concept papers have been included to show how the broader regional base spans across the basic Policy Directions. See Appendix I and Volume 3 for additional information.

Figure 3-3: Understanding the Integration of BPA Decisions with Regional Policy and Decisionmaking



3.1.5 From Definition to Comparison

There are many ways to characterize and compare alternative Policy Directions. The goal is to be able to compare the environmental consequences associated with each Policy Direction (see Chapter 5), and to see how well each alternative fulfills the purposes (see Chapter 1). Figure 3-4 shows how we went through each step, from analyzing the regional ideas, to generating the alternative Policy Directions, to comparing and evaluating the Policy Directions (reading left to right):

- First, we developed the Status Quo and the five basic alternative Policy Direction themes from the key issues and numerous proposals from the regional processes, such as the Multi-Species Framework Alternatives and the Federal Caucus Strategies (see Table 3.1-1 and Section 3.1.2). From this synthesis, descriptions of the various philosophies behind the Policy Directions were developed to help define and guide the understanding of each theme (Section 3.2).
- Then, from these many regional proposals, we developed a set of Sample Implementation Actions that were consistent with the theme for each Policy Direction (see Volume 3).
- Next, we assessed both the philosophies of the alternative Policy Directions and the Sample Implementation Actions to determine the environmental consequences that might result from the implementation of a Policy Direction. We compared each Policy Direction against Status Quo. Chapter 5 contains the analyses that show how the natural, social, and economic environments would be affected under each alternative Policy Direction.
- This Chapter contains a condensed summary of environmental consequences, consolidated to help decisionmakers readily compare effects and likely outcomes for each Policy Direction. This summary is in the form of a comparative analysis table presented in Section 3.3.2.
- Finally, after considering the entire record to date, including the completed and ongoing fish and wildlife mitigation and recovery processes in the Region, the public comments on the DEIS, and the actions being taken by others in 2002, BPA has developed a preferred alternative (PA 2002). PA 2002 is a synthesis of elements from the five basic alternatives presented in the DEIS and is within the range of alternatives analyzed. PA 2002 demonstrates (see Section 3A, at the end of this Chapter) how the information throughout this EIS and in Appendix I (Build Your Own Alternative) can be applied now and in the future to assess the environmental consequences of innumerable alternatives.

This methodology will also be used by the BPA Administrator to evaluate the environmental consequences of current and future proposals, just as it allows others to develop their own proposed combination of Policy Directions and determine the associated environmental consequences. By assembling and condensing the information in this manner, decisionmakers can more readily compare effects and likely outcomes/consequences.

3.1.6 Relationship Analysis: The Methodology Behind the Decision

Implementing and funding any of the alternative Policy Directions has environmental consequences. Before a choice can be made among the alternatives (now or in the future), it is important to understand how those consequences are characterized. This EIS uses a qualitative or "relationship analysis" to provide the decisionmaker with the necessary background to make a choice among Policy Directions. The relationship analysis is characterized by qualitative description of actions and effects rather than numerical analysis. Relationship analysis focuses on understanding the interplay of the factors that may be used in models, rather than trying to choose actual numbers for each factor and relying on the specific numerical outcomes to dictate the decision.

In fish and wildlife mitigation and recovery efforts, where there are still many biological and political uncertainties and unknowns, it is better to be generally correct. Relationship analysis is the best choice in this circumstance. Experience has shown that quantitative analysis suggests a precision that can be misleading. Scales and intensity may vary, future environmental and economic conditions are unpredictable, and quantitative models have unknown errors and assumptions. This is why BPA's EIS is focusing broadly on the more dependable *interactions between people and their environment*. A relationship analysis is less precise, but it operates at a level that more reliably and accurately indicates future effects when reviewing regionwide policy.

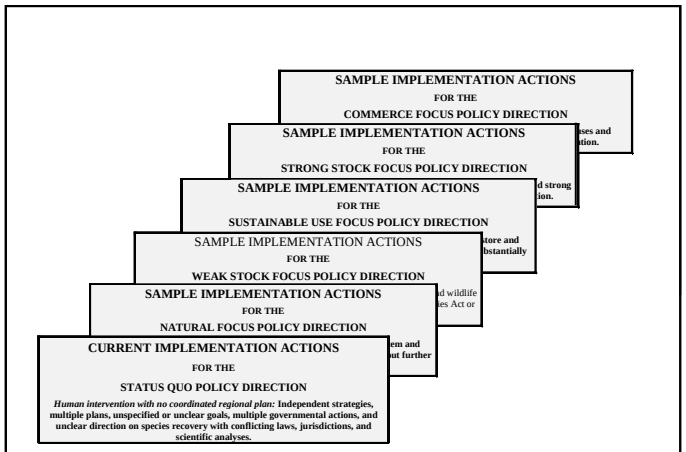
For this policy-level analysis, the extensive regional database of fish and wildlife mitigation and recovery actions has been used to establish the relationships between actions and effects. Once established, these relationships can be used as a foundation to understand the possible effects associated with actions in a broad spectrum of fish and wildlife Policy Directions, and can serve to aid in future fish and wildlife decisions for BPA, other decisionmakers, and the public. In fact, when specific actions are considered under the chosen Policy Direction, it will be possible to look at the more specific analysis and link them directly back to the broader relationship analysis. (See Figure 1-6.)

3.2 DESCRIPTION OF THE POLICY DIRECTION ALTERNATIVES

➢ **This section describes the Status Quo and the alternative Policy Directions, the philosophies behind them, and their likely components (focuses).**

This EIS examines a broad range of Policy Directions. The Policy Directions are based completely on ideas set forth in regional processes on fish and wildlife mitigation and recovery efforts, and encompass the range of possible actions assessed within regional processes over the last 10 years. All regional concepts have been considered, even where some may prove infeasible under current law, impractical for other reasons, or appear to be less effective.

Figure 3-4: Development of Environmental Consequences



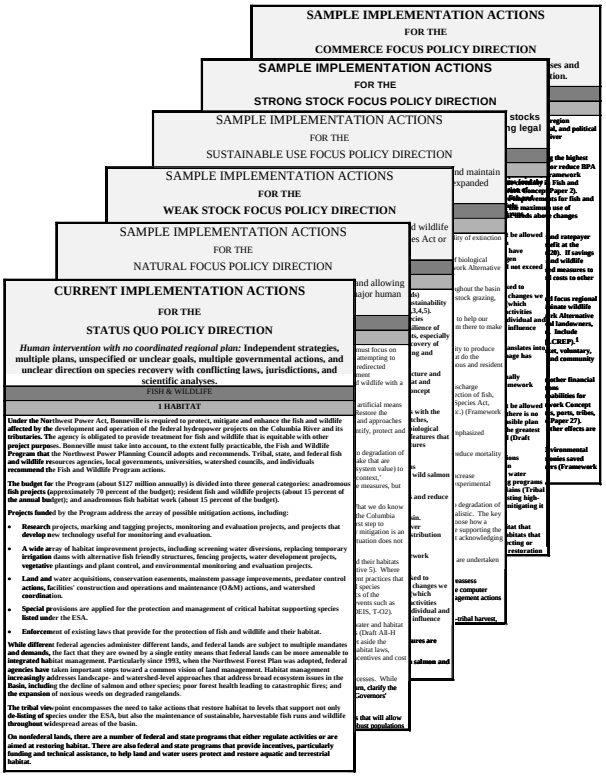
Policy Directions
or general themes are extracted from the regional processes

Key Regional Issues
are extracted from the regional processes

Table 3.2-1: Key Regional Issues

Key Regional Issues		
1 Habitat	4 Hydro	7 Transportation
1-1 Anadromous Fish	**4-1 Dam Modifications and Facilities**	**7-1 Navigation**
1-2 Resident Fish	**4-2 Hydro Operations**	**7-2 Trucking, Railroads and Infrastructure**
1-3 Introduced Species	**4-3 Spill**	8 Agriculture
1-4 Wildlife	4-4 Flow	**8-1 Irrigation**
1-5 Predators of Anadromous Fish	**4-5 Reservoir Levels**	**8-2 Pesticides and Agricultural Practices**
1-6 Watersheds	**4-6 Water Quality**	**8-3 Grazing**
1-7 Tributaries	**4-7 Juvenile Fish Migration and Transport**	**8-4 Forestry**
1-8 Mainstem Columbia	**4-8 Adult Fish Passage**	9 Commercial Fishing
1-9 Reservoirs	4-9 Flood Control	10 Residential and Commercial Development
1-10 Estuaries	5 Power	11 Recreation
1-11 Water Quality	**5-1 Existing Generation**	12 Tribes
2 Harvest	**5-2 New Energy Resources**	**12-1 Tribal Harvest**
2-1 Anadromous Fish	**5-3 Transmission Reliability**	**12-2 Tradition, Culture, Spirituality**
2-2 Resident Fish	6 Industry	
2-3 Wildlife	**6-1 Industrial Development**	
3 Hatcheries	**6-2 Aluminum and Chemical**	
3-1 Anadromous Fish	6-3 Mining	
3-2 Resident Fish	**6-4 Pulp and Paper**	

SAMPLE
IMPLEMENTATION **ACTIONS** TABLES



Sample implementation actions are given for each of the *Key Issues* to illustrate the *Policy Direction* theme. See Volume 3.

Figure 3-4: Development of Environmental Consequences (cont.)

Sample Implementation Actions to

ENVIRONMENTAL CONSEQUENCES

TABLE

Environmental Consequences

Table 5.3-1B: Air Effects across the Policy Directions (Detail)

Policy Directions

	EFFECT AREA: AIR (POLLUTION) More pollution = worse
Existing Conditions	Existing conditions of concern are mostly by-products of combustion engines used for transportation and thermal resources (e.g., coal and combustion turbines) used for power generation. Elements of major concern are carbon monoxide (CO), carbon dioxide (CO2), nitrogen (NOx), particulate matter (PM10), and sulfur dioxide (SOx).
POLICY DIRECTION	
Status Quo	Relative to existing air conditions, the Status Quo Policy Direction is expected to include some increase in air pollutants associated with additional economic growth. The increase will be dampened by existing pollution abatement programs and technological improvements. New combustion turbines will be built to meet demand, causing air emissions to increase some in the long term.
	Effect in Comparison to the Status Quo Condition:
Natural Focus	Requires a large increase in replacement of hydropower from breaching or drawdown of up to six dams, mainly from new combustion turbines and prolonging use of existing coal facilities over Status Quo. Air pollutants would increase substantially under this Policy Direction. Increased coal generation would increase PM10, CO, CO2, SOx and NOx emissions. Additional combustion turbine plants would add to these emissions, just at a much lower rate per unit of energy. In addition, emissions would increase considerably from the new truck and train traffic needed to replace current barging. Dam deconstruction would result in more airborne particulate matter, and as reservoirs empty, dust would rise from newly exposed land. As new vegetation then covers the land, dust would decrease, so those effects would be temporary.
Weak Stock Focus	There would be a sizable increase in replacement of hydropower depending on how many dams are breached (from 0 to 4 dams). The replacement power would noticeably increase air emissions from new combustion turbines and prolonged use of existing coal facilities over Status Quo. Increased coal generation increase PM10, CO, CO2, SO_X and NO_X emissions. Additional combustion turbine plants would add to these emissions, just at a much lower rate per unit of energy. Emissions would also increase from the increased truck/train traffic replacing barging. Deconstruction would result in more particulate matter, and as reservoirs empty, dust would rise from newly exposed land. As new vegetation then covers the land, dust would decrease, so those effects would be temporary.
Sustained Use Focus	Air emissions may increase from operation changes, causing the need for additional combustion turbines to replace any lost peaking capability. The long-term change in air emissions could be sizable if breaching or drawdown increases the need for replacement hydropower and prolonged operation of existing thermal resources. With breaching or drawdown, effects would be like those of Weak Stock Focus.
Strong Stock Focus	Restricts hydro operations less than under Status Quo; delays the need for replacement power and related air emissions.
Commerce Focus	Maximizes use of existing hydro system, indefinitely delays the need for replacement resources beyond Status Quo. Regional commercial competitiveness, however, could attract new industry, increasing PM_{10} and CO_2 air emissions slightly. Overall, air emissions are likely less than under Status Quo.

The environmental consequences of implementing the alternative Policy Directions are compared to the Status Quo. See Chapter 5, Section 5.3.

COMPARISON

TABLE

Policy Directions

Environmental Consequences

Effect Category	S Q	N F	W S	S U	*S S*	C F
NATURAL ENVIRONMENT						
Air Quality						
Land Habitat Upland						
Riparian/Wetland						
Water Habitat: Nitrogen Supersaturation						
Non-thermal Pollution						
Sedimentation						
Temperature/Dissolved Gas						
Instream Water Quantity						
Amount River Habitat						
Reservoir Habitat						
Fish & Wildlife Anadromous Fish**						
Resident Fish						
Native Wildlife						
Non-Native Species						
SOCIAL and ECONOMIC ENVIRONMENT						
Commerce Commercial Interests						
Recreation (including fishing & hunting)						
Economic Development						
Tribes Fishing Harvest						
Health, Spirituality, & Tradition						
Costs and Funding						
Cultural/Historical Resources						
Aesthetics						

See Chapter 3 for the summarized version and Chapter 5 for the detailed breakdown and explanations.

Each Policy Direction represents a shift toward a theme. The exact actions taken under each Policy Direction, and the intensity of those actions, are generally not established at this time. However, actions consistent with a theme could be taken, and sample implementing actions are provided in Volume 3. Existing actions not consistent with the Policy Direction, especially those in conflict with the new Direction, would likely be scaled back or eliminated.

Actions consistent with the Policy Direction would be specified and analyzed in greater detail before being implemented, as appropriate. (For a more detailed description of sample implementation actions for the Policy Directions, see Volume 3.)

The five basic Policy Direction alternatives are:

- **Natural Focus**
- **Weak Stock Focus**
- **Sustainable Use Focus**
- **Strong Stock Focus**
- **Commerce Focus**

There is also a baseline alternative against which to compare Policy Directions:

Status Quo *(no action)*

This EIS additionally identifies and analyzes a preferred alternative Policy Direction from within the range of alternative Policy Directions:

PA 2002 *(preferred alternative)*

The BPA Preferred Policy Direction is named **Preferred Alternative 2002** (PA 2002) in recognition that the "preferred" Policy Direction may change over time. Like the other alternatives, it is also composed of ideas and actions currently under consideration within the Region. It is made up of components of these five basic Policy Direction alternatives defined in this EIS, and falls within that defined range. PA 2002 is described in detail in Section 3A, at the end of this Chapter.

As noted previously, each of the Policy Directions summarized below is based on a concept for fish and wildlife policy developed or proposed by some process in the Region. None of the Policy Directions is intended to represent a value judgment by BPA or any particular group's values. The Policy Directions are intended for guidance only, and the quotations used to characterize them are not meant to indicate the views or opinions of their success. Individual readers may assert the values they find the Policy Directions represent for them.

Before going further, it is important to understand the distinction between *Status Quo* and the existing conditions.

> ***Status Quo*** *represents a continuation of the policy direction that the Region appeared to be following before 2002. The* ***current implementation actions*** *represent a snapshot view of those* ***actions*** *being taken to implement Status Quo.*

> ***Existing environmental conditions*** *are defined as the state of:*
>
> *1) physical environmental elements such as air, land, and water; and*
>
> *2) social and economic elements, such as cultural resources, commerce and funding*. (See also Section 5.1.)

In Chapter 5, the Status Quo policy direction is defined *relative to existing environmental conditions* for the complete list of effect categories. This description reveals how conditions are expected to change if no action is taken to alter existing policies. The likely changes are heavily influenced by population growth and land use practices.

While BPA considered *all* concepts presented by the regional community, in general, three basic models emerged:

- A focus on **preserving nature**, wildness, and wild creatures, setting aside areas for preservation where ecosystems will function in their natural states with little or no human intervention. The natural world is to be protected from human actions.
- A focus on **relationships between human beings and fish and wildlife** in the natural world. Humans are but one part of the integrated whole of nature and are responsible for maintaining appropriate, reciprocal relationships with fish and wildlife. These relationships emphasize a long-term connection to place and the use of natural resources to meet subsistence and spiritual needs.
- A focus on **harnessing nature** and using natural resources to meet human wants and needs. Humans can and should improve on nature, to maximize productivity, efficiency, and economic gain. The "conservation" movement of the 1930s exemplified this view: to conserve resources meant to use them; not using resources meant wasting them.

Each of the Policy Directions includes some assumptions about future conditions that are held in common with the other Policy Directions. Most of these common assumptions are existing conditions that are expected to continue in the future. Some important common assumptions are:

- Internal and external pressures for population growth and urbanization will continue unless specifically changed by an alternative. (For example, a policy that discouraged new construction might reduce urban expansion.)
- BPA's roles in marketing Federal hydropower and funding and implementing fish and wildlife programs will continue unless changed or affected by an alternative.

- All Policy Directions seek to attain their goals at the least cost practical. This statement should not be taken to mean that the goals themselves are necessarily economical or cost-efficient.

3.2.1 Status Quo Policy Direction (and Existing Conditions)

The Status Quo Alternative (and the continuation of the associated implementation actions) represents the "no action" alternative—not changing the ad-hoc approach to fish and wildlife policy that existed prior to 2002. Analysis of a "Status Quo" alternative is required by NEPA. For this EIS, the Status Quo serves as the baseline for comparison with the Policy Direction alternatives.

Additionally, the Status Quo Alternative includes reasonably expected future changes consistent with this ad-hoc approach.[2] *Increasing population, economic growth, and additional urbanization are assumed, based on existing trends.*

Description: Uses human intervention to mitigate the perceived problems facing fish and wildlife populations and to aid their recovery, with *no unified or single regional plan*. Independent strategies, multiple plans, different and sometimes conflicting goals, multiple governmental actions, and unclear expectations tend to result in a complicated and confusing mixture of many policy themes.

Focuses on modifying *hydro* system operations and increasing *hatchery* production to recover ESA-listed stocks of anadromous fish for increased harvest. The BPA mitigation and recovery funding efforts over the past decade bear this out in the substantially greater funding allocated to anadromous fish compared to that for resident fish and wildlife. Status Quo recognizes the past trade-offs between fish and wildlife and human activity and economic benefits.

Emphasis:

- Replaces (through purchases and enhancement of quality lands) terrestrial habitat for wildlife that was lost to hydro development.
- Protects and enhances habitat for anadromous and resident fish.
- Continues mixed-stock fisheries, with increased harvest opportunities only when abundance is high.
- Operates hatcheries primarily for mitigation and to support anadromous and resident fish populations for harvest.
- Operates hydro system and modifies dams for anadromous fish, especially ESA-listed stocks (e.g., through flow augmentation, spill, passage improvements, and transportation of juveniles).

[2] "Reasonably expected" means our best attempt to characterize a continuation of Status Quo considering the controversy and uncertainties about the science, politics, and regional values connected with fish and wildlife mitigation and recovery.

- Sustains commercial activity by preserving the hydrosystem electricity benefits of low-cost power and providing predictable fish and wildlife mitigation and recovery funding.
- Limits tribal harvest because of the need to protect weak stocks.

3.2.2 Natural Focus

Description: Under a unified regional planning approach, emphasizes *removing the past major human "interventions*" in the ecosystem and allowing the existing fish and wildlife to return to a natural balance without further major human intervention *(let nature heal itself).*

Focuses on protecting *habitat* and controlling *hydro* operations to reestablish ecological processes. Gives priority to wild fish and ecosystem protection by placing preservation of habitat quality ahead of economic activity. "Effort and money now spent to maintain relatively constant conditions to benefit economic needs would be redirected toward changing the ecosystem back toward the condition it was in prior to large-scale human development."[3]

The Philosophy Behind the Direction:

> *"Wilderness is not for us at all. We should allow it to exist out of respect for the intrinsic values of the rest of nature and particularly for the life forms dependant on wild habitats."*[4]

Under this alternative, the first priority is to protect areas considered pristine, especially those areas untouched by previous human development. The value of "wildness" and wild creatures is not directed at any species in particular. Rather, a high value is placed on ecosystems that function w*ithout human interference*, whatever species they may contain. Second, for those ecosystems already altered by human activities, efforts would focus on minimizing further degradation by limiting any human activities deemed environmentally destructive. Restoration would emphasize regeneration via natural processes. Third, in exceptional cases where an ecosystem has been so changed that natural regeneration is unlikely, humans might intervene to enhance the most essential elements needed for natural functioning. This Direction particularly focuses on removing those elements that have significantly altered the natural functioning of ecosystems: for instance, by breaching dams. This Direction includes "massive changes in the number and lifestyle of [humans], changes that society shows little willingness to seriously consider, much less implement."[5]

Differences from Status Quo Implementation Actions:

- Protects quality fish and wildlife habitat and allows ecological processes to proceed unimpaired by human intervention.

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[3] Council 2000c, p. 15.

[4] Nash, Roderick 2001, p.388.

[5] Lackey, R.T. 2000, p. 1.

- Decreases harvest of fish and wildlife until wild populations are stable.
- Discontinues all hatchery production.
- Removes six dams: McNary, John Day, Lower Granite, Lower Monumental, Little Goose, and Ice Harbor.
- Decreases commercial activity through limiting use of natural resources.
- Limits tribal harvest until listed fish and wildlife populations are recovered.

3.2.3 Weak Stock Focus

Description: Under a unified regional planning approach, emphasizes *human intervention to promote recovery* of weak species of fish and wildlife that are listed or proposed for listing under the Endangered Species Act or other legal protections.

Focuses on actively protecting and enhancing *habitat* and controlling *hydro* operations to enhance survival of ESA-listed fish stocks and wildlife species at all lifecycle stages. Gives priority to restoring quality habitat for weak stocks over economic activity.

The Philosophy Behind the Direction:

"Extinction is not an option."[6]

This alternative emphasizes an intensive approach to prevent the extinction of legally protected fish and wildlife populations. The priority would be on saving the weakest populations first. Reasons for preserving species might range from "existence value" to moral imperative to potential beneficial uses of species to humans.[7] In passing the ESA, Congress attached aesthetic, ecological, educational, recreational, and scientific value to the diverse environments of the nation, seeking to conserve and recover both endangered and threatened species and the ecosystems on which they depend. The ultimate goal is to "recover" species so they no longer need protection under the ESA. The ESA is the primary driver behind this Policy Direction and, because the focus is on the implementation and enforcement of this law, this Policy Direction is likely to entail more emphasis on continued regulation.[8]

Differences from Status Quo Implementation Actions:

- Protects and enhances more habitat, giving a priority to listed fish stocks and wildlife species.
- Decreases overall harvest to protect weak stocks/populations.
- Manages hatcheries for weak stocks (using methods commonly associated with conservation hatcheries).

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[6] State of Washington 1999.

[7] Rohlf, Daniel J. 1989, pp. 12-17.

[8] USDOI/USFWS 1998a.

- Removes four dams: Lower Granite, Lower Monumental, Little Goose, and Ice Harbor. Further limits hydro operations to benefit weak stocks.
- Decreases commercial activity that affects weak stocks/populations.
- Further reduces tribal harvest of weak stocks to assist fish and wildlife population recovery.

3.2.4 Sustainable Use Focus

Description: Under a unified regional planning approach, emphasizes *human intervention as part of the goal to rebuild and maintain* sustainable fish and wildlife populations to promote expanded harvest and recreation opportunities. (*Sustainable* is defined as the continued use of a resource at a stable rate over the long term.)

Focuses on increasing *hatchery* production, modifying *hydro* operations, and enhancing and managing *habitat* to increase harvest opportunities. Gives priority to harvest over other economic activity. Applies available resources to maintain and expand harvest opportunities. Emphasizes human management of targeted fish stocks and wildlife species and their habitats to balance intrinsic, recreational, and commercial value.

The Philosophy Behind the Direction:

> *"Conservation is a state of harmony between men and land."*[9]
>
> *"Conservation holds that it is about as important to see that the people in general get the benefit of our natural resources as to see that there shall be natural resources left."*[10]

This Policy Direction emphasizes the expansion of opportunities to harvest fish and wildlife resources. Humans have rights to use natural resources to meet sustenance, spiritual, and economic needs. But humans also have an obligation to ensure that those resources are self-sustaining, and therefore should intervene at all stages in the life cycles of fish and wildlife to help those populations rebuild and maintain themselves in perpetuity.[11]

Differences from Status Quo Implementation Actions:

- Enhances and manages habitat to improve production and maintain harvestable levels of fish and wildlife.
- Increases harvest of wild and hatchery fish stocks and wildlife populations.
- Increases hatchery production (using methods commonly associated with supplementation hatcheries).
- Modifies hydro operations for fish and wildlife.

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[9] Leopold, Aldo 1949, p. 207.

[10] Pinchot, Gifford 1910, p. 81.

[11] CRITFC 1996.

- Decreases commercial activity where it limits fish and wildlife production for harvest.
- Increases tribal opportunities for fish and wildlife harvest.

3.2.5 Strong Stock Focus

Description: Under a unified regional planning approach, emphasizes *human intervention to avoid declines* of strong fish stocks and strong wildlife populations preventing weakened populations that require legal protection.

Focuses on maintaining *habitat* to sustain strong fish stocks and strong wildlife populations. Avoids harm to currently strong stocks/populations by giving priority to maintaining their habitat and restricting further degradation over economic activity and new development.

The Philosophy Behind the Direction:

> *"It is time to apply 'triage' techniques, i.e., face up to what are likely irreversible declines in some runs in order to direct resources to those runs where the odds for long-term survival are better with adequate help."*[12]

The focus here is on maintaining healthy fish stocks and wildlife populations within a stable ecosystem. Program priorities would be based on the effectiveness of stock/population maintenance (as opposed to recovery). Costly efforts to recover populations that are so depleted that they cannot or likely will not be recovered should be abandoned. "Clearly, chances for survival of various runs of salmon are not equal. Many of the runs have winked out, and the genetic make-up of the fish in those runs is forever lost. Other runs continue in what appears to be an inexorable death spiral in spite of 'best' (i.e., politically acceptable) efforts. Some runs are in reasonably good shape, and may well survive with appropriate management actions. The perceived inflexibility in the ESA precludes the use of techniques to assign limited resources to those runs that have the best chance of maintenance and recovery, while ignoring those that are likely doomed."[13]

Differences from Status Quo Implementation Actions:

- Maintains habitat to support both strong fish stocks and wildlife populations.
- Increases overall harvest without weakening strong stocks/populations.
- Maintains or reforms existing hatcheries to support strong stocks.
- Decreases restrictions on hydro operations not affecting strong stocks/ populations.

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[12] Thomas, Jack Ward, Dr. 2000, p. 5.

[13] Thomas, Jack Ward, Dr. 2000, p. 4. See generally Michael, John H., pp. 235-239.

- Increases commercial activity that does not affect strong stocks/populations, while abandoning socially disruptive and economically costly weak-stock recovery efforts.
- Increases tribal harvest that does not weaken strong stocks/populations.

3.2.6 Commerce Focus

Description: Under a unified regional planning approach, emphasizes *human intervention to enhance the economic value* of river uses and allocates a portion of the revenues to fund fish and wildlife mitigation.

Focuses on increasing *hatchery* production and improving *hydro* operations to support the commercial values of the river. Gives priority to the economic efficiencies of Basin activities, applying increased revenues toward funding fish and wildlife mitigation programs. This mitigation can be carried out by funding any of the other available resources of habitat, harvest, hatcheries, or hydro that do not directly affect economic efficiency.

The Philosophy Behind the Direction:

> *"Endangered species has divided the country on an issue that seemingly pits growth (and jobs) vs. the environment. This does not have to be the case. Protecting endangered species can be integrated with economic growth, turning a win-lose or lose-lose situation into one where everyone benefits. This can be accomplished by using economic incentives to promote conservation. … Although the costs incurred by these incentives may be high in some cases, they will be highly cost-effective. The current 'at any cost' strategy is only marginally effective, and can actually harm species in some circumstances."*[14]

This Policy Direction emphasizes economic efficiency in choosing a recovery strategy. Money is a scarce resource and a major component in any mitigation and recovery plan, and should be spent only when costs are justified by benefits. This Direction represents an approach to fish and wildlife conservation that decreases government regulation and emphasizes voluntary actions, financial incentives, and market mechanisms to bring about desired results. Private companies and citizens are given positive incentives and flexibility to determine how they can best meet the goals of conservation, while still fulfilling their economic needs. Cost efficiency would consider hydrosystem benefits and benefits foregone, as well as program costs. "For us, we have to be left standing if we are going to support it (a unified plan). This can't be a recovery effort that sticks it to all the economic interests."[15,16]

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[14] Schaerer, Brett 1996, p.1.

[15] Smith, Craig 1998.

[16] PNWA 1996; Schaerer, Brett 1996; PNWA 2000.

Differences from Status Quo Implementation Actions:

- Stresses maintenance or enhancement when it is the best economic use of fish and wildlife habitat.
- Increases harvest of fish and wildlife.
- Increases hatchery production of marketable fish.
- Decreases restriction on hydrosystem operations, supporting economic growth.
- Increases commercial activity based on market forces.
- Increases tribal harvest through fish farming and hatchery production.

3.3 COMPARING THE POLICY DIRECTIONS

- **This section compares the five basic Policy Direction alternatives against the Status Quo (baseline), first in terms of their likely environmental consequences, then against the EIS purposes. The comparison of environmental consequences is described in terms of *relationships*, not numeric computations (see Section 3.1.6).**
- **For a comparison that includes PA 2002, please turn to Section 3A, at the end of this Chapter.**

This EIS is not intended to define the Region's values. It is, instead, designed to provide an understanding of the many issues that affect the Region's ability to reach a more comprehensive and consistent unified planning approach for fish and wildlife mitigation and recovery. The Administrator must make fully informed decisions about BPA's funding and the implementation of its fish and wildlife obligations to support the Region's mitigation and recovery effort. Understanding the environmental consequences of implementing the Policy Direction that best reflects the Region's position is paramount. An important objective of this EIS is to provide that information. Another important objective of this EIS is to show how that Policy Direction will affect BPA's ability to fulfill the stated purposes. In deciding on a Policy Direction, the Administrator will consider both the environmental consequences (Section 3.3.1) and the analysis of the purposes (Section 3.3.2), as well as other relevant factors (Section 3.3.3), including public input.

3.3.1 Comparing Alternatives by Environmental Consequences

Table 3.3-1 provides a summary of **Natural Environment** and **Social and Economic Environment**[17] **consequences** of the alternative Policy Directions, based on the analysis in Chapter 5. Results are summarized as being better or worse for fish and wildlife and their habitat, as well as better or worse for the economic and social well-being of the

[17] For information about the existing environmental conditions in these effect areas, please see Chapter 5, Section 5.1. For a more detailed discussion of environmental consequences, including the analysis behind Table 3.3-1, please see Section 5.3.

Region. The summary table illustrates the anticipated long-term environmental effects of the alternative Policy Directions compared to environmental conditions in the Status Quo (baseline) Policy Direction. The summary highlights the areas where the effects are clearly different, but also shows where they may be similar, offering the opportunity to quickly see the possible "trade-offs."

The effects shown for each Policy Direction are described as they would occur before any mitigation is undertaken. Public policy, as well as mitigation, evolves as the Region responds to these trade-offs. Effects are shown by shading to indicate whether a given Policy Direction would tend to have effects that are the same as, better than, or worse than Status Quo. Effect categories are condensed from the expanded list of categories evaluated in Section 5.3. Condensing allows the reader to more easily see the major trends in effects. Where categories are condensed, the summaries represent the central tendency of the more detailed results presented later in this document.

In reading the Table 3.3-1, which is based on a *relationship analysis*, it is useful to remember the following points:

- The Status Quo (i.e., the No Action Alternative) is used as the *baseline* to compare the environmental consequences of each of the five alternative Policy Directions.
- The Status Quo is established by describing the types of actions being taken prior to 2002 and anticipated to continue without a unified Policy Direction.
- No judgment is made about whether the Status Quo, or any other Policy Direction, is *good* or *bad*. Some may believe that economic prosperity should be the overriding value; others may believe that maintaining a natural environment should be the appropriate value. Still others may believe that some form of balance between economic prosperity and preservation of the natural environment should be the "correct" value for the Region. These disparate viewpoints are represented within the range of alternatives.
- Status Quo serves as a "neutral" point for comparing the environmental consequences for each of the alternative Policy Directions. This makes it possible to determine whether and how much each Policy Direction effects the condition of the environment. These effects are labeled as "better" or "worse."

Ideally, the "best" alternative might be selected by looking for the greatest number of *light-colored* boxes (improving conditions). But there is no clear single choice. The issues are complex: a "better" for one factor may mean a "worse" for another important factor. (For example, a "better" for anadromous fish might mean a "worse" for resident fish.) As noted earlier, there will also be other considerations regarding laws, perceptions, and values. Many people are involved in developing a plan for mitigation and recovery, and many different authorities govern the participants. This means that trade-offs will have to be considered.

The reader can use Table 3.3-1 to determine which one of the Policy Directions might best reflect her or his unique perspective:

(1) First, look down the column of boxes for each Policy Direction to find where the effect areas of greatest concern for environmental consequences will likely be for the different directions. Here, mitigation (if available) may be needed to lessen the effect—perhaps by a physical action such as making a dam modification or change in habitat.

(2) Next, consider which Policy Direction has the greatest number of benefits from the reader's (your) perspective (light-colored boxes).

(3) Then, determine how well the desired Policy Direction fulfills the purposes (Chapter 1). (See Table 3.3-2)

Note: If none of these "fits" the reader's or decisionmaker's concept of a better Policy Direction, the table and the Sample Implementation Actions (Volume 3) can be used to construct additional Policy Directions by "mixing and matching" parts of different Policy Directions. For information on how to do this, please see Section 3.5.3 or Appendix I.

3.3.2 Comparing Alternatives against EIS Purposes

In Chapter 1, we described the state of significant disagreement within the Region about the "best" way to recover endangered or threatened species and to maintain self-sustaining populations of fish and wildlife. There is no clear regional consensus about what the goals of a mitigation and recovery plan should be, and there is considerable uncertainty as to whether any of the proposed actions will produce the desired results. This problem was confirmed in the comments received on the draft of this EIS (See Chapter 8 and Appendix K.).

However, BPA needs a comprehensive and consistent policy to guide its implementation and funding of fish and wildlife mitigation and recovery actions. In meeting that need, BPA must consider whether a policy would:

- Facilitate implementation of a regional unified planning approach,
- Fulfill obligations under the Regional Act,
- Fulfill the Administrations' Fish and Wildlife Funding Principles,
- Fulfill BPA's other obligations under law, and
- Promote predictable and stable fish and wildlife costs and competitive rates.

These purposes, which were described in Chapter 1, are used to measure how well each of the Policy Directions would meet BPA's need. Table 3.3-2 (below) evaluates each Policy Direction against those purposes.

Table 3.3-1: Comparison of the Alternatives*

Effect Area	*Status Quo**	*Natural Focus*	*Weak Stocks*	*Sustain-able Use*	*Strong Stocks*	*Commerce Focus*
NATURAL ENVIRONMENT						
Air Quality	Same	Much Worse	Much Worse	Same	Same	Better
Land Habitat	Same	Better	Better	Better	Same	Better
Upland						
Riparian/Wetland	Same	Better	Better	Better	Same	Same
Water Habitat	Same	Much Better	Better	Same	Better	Better
Nitrogen Supersaturation						
Non-thermal Pollution	Same	Better	Better	Better	Same	Better
Sedimentation**	Same	Much Better	Better	Better	Worse	Better
Temperature/Dissolved Oxygen	Same	Better	Better	Same	Same	Better
Instream Water Quantity	Same	Better	Better	Better	Same	Better
Amount Stream/River Habitat	Same	Much Better	Better	Better	Same	Better
Reservoir Habitat	Same	Much Worse	Worse	Same	Better	Better
Fish and Wildlife	Same	Better	Better	Better	Worse	Much Worse
Naturally-spawning Native Anadromous Fish						
Hatchery-produced Native Anadromous Fish	Same	Much Worse	Better	Better	Better	Much Better
Native Resident Fish	Same	Better	Much Better	Better	Worse	Worse
Native Wildlife	Same	Better	Much Better	Better	Better	Worse
Non-Native Species***	Same	Worse	Better	Same	Worse	Better
SOCIAL AND ECONOMIC ENVIRONMENTS						
Commerce	Same	Much Worse	Worse	Same	Better	Better
Recreation	Same	Much Worse	Worse	Better	Better	Better
Economic Development	Same	Much Worse	Worse	Same	Better	Much Better
Funding Costs	Same	Much Worse	Much Worse	Same	Better	Better
Tribes	Same	Much Worse	Worse	Better	Better	Better
Fish Harvest						
Health, Spirituality, and Tradition	Same	Worse	Better	Better	Worse	Much Worse
Cultural/Historic Resources	Same	Much Worse	Much Worse	Same	Same	Worse
Aesthetics	Same	Worse	Much Better	Same	Worse	Worse

* The alternatives are compared against Status Quo (baseline conditions). For more information on existing conditions, please see Section 5.1.

** The sedimentation evaluation is based on long-term effects. Under Natural Focus and Weak Stock the short-term effects from dam breaching would be much worse than those conditions.

*** Under this analysis fewer non-native species is considered "better". For a complete discussion, see Chapter 5.

Much Better	Better	Same	Worse	Much Worse

The differences among the Policy Directions (including Status Quo) often turn on differences in opinions and perceptions. This EIS condenses information from thousands of pages of key sources across the Region, presents this information in a user-friendly way, and provides a reasonably objective discussion of the data. However, public opinion in the Region regarding fish and wildlife mitigation and recovery efforts will be a prime factor in determining the degree to which BPA will be able to meet all its purposes. As one group or another sees a particular Policy Direction as superior or inferior, extreme or moderate, those views will affect BPA's ability to meet its purposes. Consideration of factors such as legal challenges, political interventions, and direct pressure on the Administrator from these outside influences, have been factored into the discussion. More information about these factors is presented in Chapter 4.

Table 3.3-2: Comparison of Policy Direction Alternatives against EIS Purposes

Facilitate implementation of a regional unified planning approach for fish and wildlife mitigation and recovery efforts that will improve: coordination, efficiency, and consistency.	
Status Quo	The implementation actions are often uncoordinated and inefficient because there is no unified planning approach. The actions are implemented through a series of multi-governmental plans in an attempt to meet numerous and sometimes-conflicting statutes, regulations, and authorities. In addition, there are many inconsistencies within the mitigation and recovery efforts.
Natural Focus	This approach of letting "nature heal itself" may significantly change existing socioeconomic patterns in the Region. This approach is likely to be perceived as an extreme position that disregards the economic well being of the Region, and given that it is at one end of the alternatives spectrum, it will likely be very difficult to achieve regional consensus on such an approach.
Weak Stock Focus	This approach represents a distinct push to recover *all* ESA-listed fish and wildlife. This Direction may be seen by some as an inefficient use of financial resources for the overall benefit of fish and wildlife. Because it focuses heavily on legally protected fish and wildlife at a great cost, it may be perceived by some in the Region as not providing a broad benefit for all fish and wildlife or the regional economy, and thus likely would not result in a truly regional unified planning approach.
Sustainable Use Focus	This Policy Direction represents an all-inclusive approach to fish and wildlife mitigation and recovery. By focusing efforts at all stages of the life cycle of ESA-listed and non-listed species, it might be perceived by some as more effective in rebuilding populations, although others may be confused by its lack of specific focus on listed species. Because it recognizes both the obligation to ensure natural resources are self-sustaining and the right for humans to use those same resources to meet sustenance, spiritual, and economic needs, this direction may be acceptable to much of the Region's population.
Strong Stock Focus	The emphasis on strong fish stocks and healthy wildlife populations under this approach will likely alienate those in the Region who believe that the emphasis should be on recovery of ESA-listed species, or those species most at risk. Others may see this approach as more economically efficient because less focus is on the weakest stocks or species. Overall, the likely opposition to this approach probably would make it difficult to achieve regional consensus on such an approach.

Commerce Focus	This Policy Direction favors a willingness to mitigate fish and wildlife to the extent there is a clear and direct economic benefit to doing so. Because it emphasizes the economic value of the river uses and allocates just a portion of revenue to fund fish and wildlife mitigation, it likely would be viewed by many in the Region as disregarding the importance of fish and wildlife. Therefore this may be seen as an extreme position, and it may be extremely difficult to achieve regional consensus on such an approach.
Fulfill statutory, legal obligations under the Regional Act; especially, BPA's obligations to: protect, mitigate, and enhance fish and wildlife; provide equitable treatment for fish and wildlife with the other purposes of the FCRPS; and provide a reliable, adequate, efficient, and economical power supply for the Pacific Northwest.	
Status Quo	Although BPA currently is able to satisfy all of its legal obligations under the Regional Act, BPA is often faced with difficult decisions in balancing these obligations, particularly in situations such as low water years. The lack of coordination and consensus among the numerous agencies with competing authorities also causes BPA's current fish and wildlife mitigation and recovery efforts to be less efficient and effective than they might otherwise be, which can make it appear that BPA is having difficulty in meeting its relevant legal obligations. In addition, BPA's efforts may sometimes appear inconsistent with other regional actions.
Natural Focus	This focus would require a dramatic change from reliance on the current hydro-based power system to one based on other types of resources. BPA's ability to remain a competitive, low-cost provider of electric power in the Region would likely be compromised with a greater reliance on non-hydro resources. Also, BPA's role as a major contributor to fish and wildlife mitigation and recovery would decrease since the responsibilities for mitigation of the FCRPS effects would be less as the six dams were removed and hydropower impacts and revenues decrease.
Weak Stock Focus	Under a weak stock approach, BPA would have difficulty meeting the agency's power supply requirements because additional hydro operations for fish would reduce power production. BPA's responsibilities for fish and wildlife mitigation due to the effects of the FCRPS would likely be less because four dams would be removed**.** Overall, BPA would likely have difficulty fully meeting its power-related obligations under this alternative Policy Direction.
Sustainable Use Focus	The approach would be the most likely to allow BPA to remain competitive in the electric utility market and provide low-cost electric power since the hydrosystem and inexpensive hydro power would remain relatively intact. BPA would retain its role as the major contributor to fish and wildlife mitigation because this approach would allow BPA to generate revenues and contain costs.
Strong Stock Focus	This approach would provide greater certainty that BPA could fulfill its power responsibilities under the Regional Act because it would allow for increased power generation from the FCRPS. Conversely, this Policy Direction may give the perception that BPA is not meeting its mitigation obligations under the Regional Act, due to possible differing views over whether a strong stock focus is consistent with the Regional Act's intent for protecting, mitigating, and enhancing fish and wildlife and providing equitable treatment.
Commerce Focus	Under this approach, the focus on enhancing economic values of the river likely would make it more difficult for BPA to fund activities and take other measures to protect, mitigate, and enhance fish and wildlife as well as provide equitable treatment without a change in legislation. Under this Policy Direction, BPA thus would likely have difficulty in meeting this purpose.

Fulfill the Administration's Fish and Wildlife Funding Principles such that BPA: meets all of its fish and wildlife obligations, once established; takes into account the full range of potential fish and wildlife costs; demonstrates a high probability of Treasury repayment; minimizes rate effects on power and transmission customers; adopts rates and contracts that are easy to implement; and adopts a flexible fish and wildlife strategy.	
Status Quo	Given the number of agencies with competing regional authorities to implement fish and wildlife activities, BPA has sometimes had substantial difficulty in satisfying all of the principles. Increasing requests for funding fish and wildlife actions that may be outside BPA's authorities have complicated BPA's efforts to fund fish and wildlife mitigation and recovery clearly within its authorities. The high costs for fish and wildlife and the lack of regional coordination has reduced the probability of Treasury repayment without, until recently, rate effects. Additionally, cost uncertainty is unsettling to customers and bond markets, making it more difficult for BPA to gain stability and predictability from contracts and refinancing.
Natural Focus	Such a major change to BPA's power and transmission base would likely result in BPA's costs exceeding its revenues because of the increased costs of replacing lost hydropower, constructing new transmission, and protecting habitat would cause BPA's rates to rise substantially. The loss of business and economic flexibility under this approach would make it difficult for BPA to meet the Principles.
Weak Stock Focus	The increased costs of replacing lost hydropower, constructing new transmission, and protecting and enhancing habitat would cause BPA's rates to rise substantially. As BPA's rates approach MSR (see discussion in Chapter 2 Section 2.3.2.3), the probability of making the Treasury repayment decreases and BPA's ability to fulfill the other Principles will be difficult.
Sustainable Use Focus	Under this Policy Direction, modifications to the hydrosystem to benefit fish and wildlife would not likely result in substantial loss of generation and subsequent revenues, thus the need to raise rates or jeopardize the Treasury repayments would be minimized. These modifications, along with habitat enhancements and hatchery production will help BPA meet its other fish and wildlife obligations.
Strong Stock Focus	Decreased restrictions on hydrosystem operations would mean more potential to generate low-cost power. There could also be a reduction in BPA's fish and wildlife costs, as recovery efforts are no longer funded for populations that are so weakened that they are not likely to recover. This would likely result in BPA's ability to keep its rates down and make its Treasury repayment.
Commerce Focus	Under this Policy Direction, hydropower generation likely would increase dramatically allowing for lower rates and higher probability of Treasury repayment. Although more revenues from this increased generation also might be available to fund fish and wildlife programs, the emphasis of this approach on economic efficiencies over fish and wildlife mitigation and recovery may undermine BPA efforts to fulfill its current fish and wildlife commitments, including its equitable treatment obligation. Therefore, BPA's ability to fulfill the Principles would be difficult.
Fulfill BPA's other obligations under other applicable laws, including Federal treaty and trust responsibilities with regional tribes, the Endangered Species Act, the Clean Water Act, and the National Historic Preservation Act.	
Status Quo	The multiple and potentially conflicting authorities held by various Federal, state, and tribal entities involved in fish and wildlife mitigation and recovery frequently cause confusion about compliance with other applicable statutes and requirements. While BPA currently fully complies with these laws and requirements for its activities, the competing interests and priorities in the Region, the legal challenges that arise often stem from the lack of regional coordination, apparently conflicting authorities, and incompatible multi-agency fish and wildlife actions.

Natural Focus	This Policy Direction would likely make it difficult for BPA to meet all of its obligations under the ESA, CWA, and NHPA unless removal of the six dams also removed BPA's responsibility under these acts. Cultural resources would likely be damaged under this approach due to the removal of dams and subsequent exposure of artifacts, and many listed species and water quality would likely be impacted, at least initially, jeopardizing the ability to meet tribal harvest goals.
Weak Stock Focus	This approach focuses heavily on ESA-listed fish and wildlife, and thus would likely allow BPA to fulfill its ESA obligations. However, there may be impacts to cultural resources, as well as water quality, from dam removal. BPA would still likely be able to meet its treaty and trust responsibilities by retaining the tribes harvest levels.
Sustainable Use Focus	This focus is by design is to be more balanced for the major aspects of fish and wildlife mitigation and recovery. It also gives more of an equal weight to all laws and regulations. Because of this focus, it is likely to meet less resistance to fulfilling these legal obligations.
Strong Stock Focus	This approach, because of its focus on healthy fish stocks and wildlife populations, would likely be viewed as inconsistent with the ESA and other protections for fish and wildlife. This factor alone would likely make it more difficult for BPA to fulfill this purpose.
Commerce Focus	Under this Policy Direction, it would be difficult to comply with the ESA and some provisions of the CWA since it favors a willingness to mitigate fish and wildlife to the extent there is a clear and direct economic benefit to doing so.. There would likely be more fish for tribal harvest from the increase use of artificial production. The inconsistency with other environmental obligations, as well as the extreme nature of this position being at one end of the spectrum of alternatives, is likely to increase the difficulty of meeting this purpose.
Promote predictable and stable fish and wildlife costs and competitive rates, enhancing BPA's ability to provide funding for public benefits and remain competitive in the electric utility marketplace.	
Status Quo	BPA's customers are concerned about increasing and unpredictable fish and wildlife costs. BPA's status as a low-cost power provider and its competitive position in the marketplace is constantly changing. Any significant cost changes such as those for fish and wildlife mitigation and recovery could cause BPA to approach MSR. This makes it difficult to balance costs and revenues and reduce the overall amount of fish and wildlife funding available.
Natural Focus	This approach might eventually lead to more predictable and stable fish and wildlife costs, as a consequence of breaching dams because removing the dams would remove BPA's obligations for fish and wildlife mitigation for that part of the hydro system. However, the cost associated with replacing the lost hydropower with more costly power from other sources would likely cause BPA's rates to increase, making BPA less competitive. This would result in less revenue being available to fund fish and wildlife activities and other public benefits, and BPA thus likely would not be able to fully meet this purpose under this approach.
Weak Stock Focus	Under this Policy Direction, it would be likely that more fish and wildlife funding would be sought from BPA to recover all listed species. However, the cost associated with replacing the lost hydropower with more costly power from other sources would likely cause BPA's rates to increase, making BPA less competitive. This could result in less revenue being available to fund fish and wildlife activities and other public benefits. Thus, BPA likely would not be able to fully meet this purpose under this approach.

Sustainable Use Focus	Funding levels would be established to achieve sustainable populations for harvest. This would likely result in more predictable and stable costs. This approach could be more costly as it provides benefits for both listed and non-listed species, which could affect BPA's competitiveness in the market and ability to provide funding for other public benefits. However, because BPA would retain all of its hydropower resources under this approach, these effects would not be expected to significantly affect BPA's ability to achieve this purpose under this approach.
Strong Stock Focus	This Policy Direction would likely have lower and more stable fish and wildlife costs because funding would not be provided specifically for listed species. Additionally, the decreased restrictions on hydro operations would generate more revenue and forestall costs associated with the acquisition of new energy resources. The more stable costs would likely ensure more predictable funding for fish and wildlife and other public benefits, as well as enhance BPA's competitiveness.
Commerce Focus	This focus would treat fish and wildlife costs as a business expense and factor them into overall competitiveness within the marketplace. The fish and wildlife costs would likely be more predictable and stable than under Status Quo. More funding would be available for fish and wildlife from other sources, making more funds available for BPA funding other public benefits.

3.3.3 Important Policy Direction Decision Considerations

The following considerations are also very important in the consideration of any public policy choice, and should be kept in mind when comparing Policy Directions.

Legal parameters – Some of the Policy Directions listed, or hybrids that may be created, may seem incompatible with current laws or regulations.[18] As with policies, laws and regulations change over time. A Policy Direction considered incompatible with the present laws might be consistent with future legislation or interpretation of the law. If individual actions within a particular Policy Direction would require legal reconciliation or adjustment, necessary measures would have to be taken prior to implementation of that Policy Direction.

Regional values – Given the broad diversity of opinion in the Region, any proposed solution is likely to please some and upset others. Decisionmakers recognize that there are often conflicting values for natural resources in the Columbia River Basin. These different value systems are represented across the range of Policy Directions.

Political intervention – Many of the actions that have been proposed for fish and wildlife mitigation and recovery efforts have generated a great deal of controversy due to their anticipated effects. The degree of political resistance to any given Policy Direction is directly related to the degree of economic, social, and natural environmental consequences of that Policy Direction. The Region must consider what kinds of tradeoffs it is willing to make in minimizing these environmental consequences. It is unlikely that a "sacrifice-free" option will emerge. Political pressure is likely to play a significant role

[18] An alternative that is outside the legal jurisdiction of the lead agency must still be analyzed in the EIS if it is reasonable. A potential conflict with local or Federal law does not necessarily render an alternative unreasonable, although such conflicts must be considered. CEQ 1981, Question 2 and CEQ 1987, Sec. 1502.14.

in the selection and successful implementation of any regional fish and wildlife mitigation and recovery plan.

3.3.4 Other Considerations: Implementation

In addition to the environmental consequences and the purposes discussed in this document, decisionmakers need to consider questions about implementation when selecting a Policy Direction. As discussed in Section 3.3.3 above, practical concerns, such as the legal feasibility of implementation, regional values, and the degree of political support, should be taken into account.

Other questions to consider include the following:

- How many species will benefit?
- What is the magnitude of benefit?
- What is the certainty of achieving the intended results?
- How long might it take to achieve the intended results for fish and wildlife?
- How likely is it that the Policy Direction can be implemented?
- How long can the benefits of the selected actions be expected to last?

The questions above were drawn from the Federal Caucus' Conceptual Plan (draft "All-H Paper") process. These are examples only; each decisionmaker undoubtedly will raise his or her own questions, unique to his or her circumstances. A more detailed discussion of implementation factors—those events or influences that may determine whether or not a Policy Direction will be successful—can be found in Chapter 4.

3.4 FURTHER CONSIDERATIONS REGARDING THE COMPARISON OF POLICY DIRECTIONS

➢ **This section briefly discusses the relationship between short-term uses of man's environment and the effects on long-term productivity, irreversible and irretrievable effects, and cumulative impacts.**

Both NEPA and the CEQ regulations implementing NEPA specify that the analysis of environmental consequences include an examination of the relationship between short-term uses of the environment and the effects on long-term productivity, irreversible and irretrievable effects, and cumulative impacts. In this EIS, the discussion of these environmental impacts has been incorporated into Sections 5.2 Generic Environmental Effects and 5.3 Environmental Consequences of Policy Directions.

3.4.1 Relationship between Short-term Uses of the Environment and the Maintenance and Enhancement of Long-term Productivity

When considering the environmental consequences of an alternative Policy Direction, it is important to consider the relationships between the short-term uses of man's environment and the maintenance and enhancement of long-term productivity. All of the Policy Directions analyzed in this EIS examine the possible actions the Region could take for fish and wildlife mitigation and recovery. Almost all of these actions require a short-term use of the environment in order to benefit long-term productivity of fish and wildlife. For example, the construction of a hatchery is a short-term use of the environment. Land would need to be cleared for the facility and water would be acquired to use for rearing fish. These short-term uses are necessary in order to maintain and enhance the long-term productivity of the targeted species of fish. It is also important to remember that a short-term uses designed to benefit one species may, in fact, be detrimental to the long-term productivity of another species. Although the hatchery may benefit the targeted species in the long-term, it could facilitate increased competition, predation, and the general decline of other species.

In addition to the impacts to the long-term productivity of the natural environment, short-term uses for fish and wildlife mitigation and recovery may also result in effects to the long-term productivity of the economic and social environments. A hatchery may impact the economic environment by supporting the long-term productivity of commercial and recreational harvest. While in the social environment, a hatchery-produced fish may have less value than a naturally-spawned fish, and be viewed as detracting from the long-term productivity of the ecosystem. For a discussion of the potential effects to the natural, economic, and social environments please see Section 5.3.

Some short-term uses of the environment may also have associated effects. These associated effects may, in turn, limit the maintenance and enhancement of long-term productivity of the environment, including the natural, economic, and social environments. For example, breaching a dam to benefit anadromous fish—the short-term use— would likely result in the need for replacement power. The replacement power could require a new energy generating resource. This resource would likely have impacts to the natural environment—air, land, water, and fish and wildlife—as well as impacts to economic and social environment—increased power rates and decreased aesthetics. For a discussion of intended and associated effects, please see Section 5.2.

3.4.2 Irreversible and Irretrievable Effects

When considering the environmental consequences of an alternative Policy Direction, it is also important to consider any irreversible and irretrievable effects. An irreversible and irretrievable commitment of resources (IIC) occurs when resources are consumed or lost such that they cannot be recovered. These effects must be identified and described where possible.

The discussions of environmental impacts in Section 5.2 and Section 5.3 include examples irreversible and irretrievable effects. In fact, all of the alternative Policy

Directions include some IIC. For example, cultural resources may be lost due to construction, fossil fuels may be consumed by new generation, water spilled to enhance fish migration, and habitat can be inundated. In considering the environmental consequences of alternative Policy Directions for fish and wildlife mitigation and recovery, two important concepts that must be recognized are: extinction is an irreversible and irretrievable effect and fish and wildlife funding, spent in a particular year, is also an irreversible and irretrievable effect. These two effects are very important when making decisions and implementing a Policy Direction.

Any IIC that could occur due to a specific action taken for fish and wildlife mitigation and recovery would be considered in a site-specific manner. Numerous potential actions are described in the Sample Implementation Actions in Volume III. If these or other actions are implemented, the site-specific environmental document (e.g. tiered ROD) will address these effects. See Chapter 1.

3.4.3 Cumulative Impacts

A cumulative impact is one that results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Assessing cumulative impacts is best served by consideration of both the broad-based actions (e.g. policy and programs) and the site-specific actions. This EIS is designed to account for the potential cumulative impacts of many site-specific actions when following a particular Policy Direction. The assessment of cumulative impacts from reasonably foreseeable actions in this EIS is furthered by the use of a tiered ROD process (Chapter 1). The tiered ROD process connects program or site-specific projects to the policy-level analysis and decisions of this EIS. Thus, this document describes all the environmental effects—direct, indirect, and cumulative—of choosing a particular Policy Direction or combining several Policy Directions. For more information regarding the types of effects that could result from a particular Policy Direction, please see Section 5.2 and 5.3.

3.5 MODIFYING, EXTENDING, OR CREATING A POLICY DIRECTION

As changes occur in the natural, economic, and social environments, decisionmakers must have the flexibility to respond to these changes by modifying, extending, or creating new Policy Directions. This EIS incorporates three tools to provide flexibility in responding quickly to changing conditions—Response Strategies, Reserve Options, and the Mix and Match approach. Each of these tools is briefly described below.

3.5.1 Response Strategies

Response Strategies allow decisionmakers to make immediate corrections or improvements to a chosen Policy Direction. These modifications are such that they do not alter the underlying theme of the Policy Direction. The Response Strategies are used

to facilitate implementation of fish and wildlife mitigation and recovery efforts and to address unforeseen or uncertain events. For a complete discussion on Response Strategies, see Section 4.2.

3.5.2 Reserve Options

Reserve Options incrementally extend or intensify the different components of the five base alternative policy directions beyond the endpoints circumscribed by the Natural Focus and Commerce Focus alternatives. These Reserve Options essentially give future decisionmakers the flexibility to extend the range of alternatives to respond to change. For a complete discussion of Reserve Options see Section 4.2. For analysis of the environmental consequences of the Reserve Options see Section 5.4

3.5.3 Build Your Own Alternative: A Mix and Match Approach

A new Policy Direction may be needed to meet the changing needs of the fish and wildlife mitigation and recovery effort in the Region. To accommodate this likelihood, a means to "mix and match" components of the alternative Policy Directions to create a myriad of "hybrid" alternatives has been designed. These hybrids can combine the themes, and the sample actions determined to be consistent with those themes, of more than one Policy Direction. (Some implementation actions may be incompatible with others; therefore not all combinations are possible.) Decisionmakers can thereby respond to areas of known controversy or concern within the Region, or can choose alternative strategies that better meet their needs at the time of decision.

In this EIS, BPA has analyzed a broad range of alternative Policy Directions; identified a number of key issues; and, consistent with the themes of the Policy Directions, identified and sorted individual implementation actions across the key issues. By combining components of the various Policy Directions, the BPA Administrator (and other decisionmakers) have the necessary information to understand the overall environmental consequences of other possible alternatives for fish and wildlife mitigation and recovery. Decisionmakers can quickly assess the environmental consequences without being drawn into a needlessly protracted procedural process at a time when expedient decisions are essential to the mitigation and recovery of fish and wildlife species. For a complete discussion on how to use the Mix and Match approach see Appendix I, Build Your Own Alternative.

BPA's preferred alternative, PA 2002, was developed using the Mix and Match approach. PA 2002 is essentially a blend of two different Policy Directions: Weak Stock Focus and Sustainable Use Focus. PA 2002 reflects the overall fish and wildlife mitigation and recovery policy in the Region as of 2002. A full discussion of PA 2002 and its potential environmental consequences follows in Section 3A.

As time goes on, the need for new or substantially modified Policy Directions will likely be necessary, and the same process used to develop the PA 2002 alternative would then be applied. Having this process in place will help avoid unnecessary delays in implementing fish and wildlife mitigation and recovery actions. The Mix-and-Match

approach can also be used to simulate actual regional proposals to determine what natural, economic and social environmental effects can reasonably be expected from their implementation.

- **Chapter 4, Implementation and Response to Change, discusses factors that can influence the direction of and success in implementing each Policy Direction, and presents ways to assist implementation and respond to change. It also presents the criteria for implementation results.**

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3A BPA PREFERRED ALTERNATIVE 2002 (PA 2002)

➢ **After completing several important steps—**

- considering completed and ongoing regional fish and wildlife mitigation and recovery processes,
- seeking out and considering public comment on the issues and alternatives,
- evaluating the likely environmental consequences,
- considering the Status Quo (baseline) alternative,
- comparing the five Policy Direction alternatives, and
- reviewing the EIS purposes—

BPA has identified the Preferred Alternative Policy Direction described below.

During this EIS process, BPA has spent more than three years participating in, surveying, and assessing the various regional fish and wildlife mitigation and recovery processes to be able to describe and understand the Region's policy position on the mitigation and recovery effort. Using this information as a guide, BPA has developed the following Preferred Alternative Policy Direction (PA 2002). The PA 2002 reflects the past several years of regional fish and wildlife policy guidance and more specifically considers the state of the overall 2002 policy in the Region established by several key decisionmaking entities. The PA 2002 will serve as the initial means to guide BPA in meeting its need for a comprehensive and consistent policy for implementation and funding of its fish and wildlife mitigation and recovery efforts.

After carrying out an extensive public discourse on the Policy Directions, BPA reviewed all options equally before selecting a Preferred Alternative. BPA sought, and will continue to seek, suggestions for additional alternatives that might better meet regional, as well as BPA, needs in the future. BPA has considered the comments brought forth during the public review of the Draft EIS and has reflected on this information in light of the related policy actions being taken in 2002 by others before making this designation of a Preferred Alternative Policy Direction. BPA will do the same in any future decisionmaking process.

BPA has obligations to avoid jeopardizing listed species under ESA and to mitigate for impacts to fish and wildlife in a manner consistent with the Council's Fish and Wildlife Program. This EIS shows, however, that there are many other highly important natural and socioeconomic resources affected by any Policy Direction BPA might take. Identifying the PA 2002 Policy Direction to guide its implementation and funding of fish and wildlife mitigation and recovery efforts underscores BPA's desire to be able to make a fully informed decision that will consider the potential environmental consequences and fulfill BPA's purposes in carrying out its mission as a Federal agency. See Section 3A for a detailed analysis of the PA 2002.

Description: The focus of the PA 2002 is to protect weak stocks of fish and achieve biological performance standards, as set forth in the BiOps, while sustaining overall populations of fish and wildlife for their economic and cultural value. PA 2002 is essentially a blend of the *Weak Stock* and *Sustainable Use* Alternative Policy Directions.[19] The Weak Stock Alternative emphasizes *human intervention to support recovery* of weak fish stocks and wildlife populations that are listed or proposed for listing under the Endangered Species Act or that have other legal protections. The Sustainable Use Alternative emphasizes *human intervention as part of a goal to rebuild and maintain* sustainable fish and wildlife populations to promote expanded harvest and recreation opportunities. As under both Alternatives, the unified regional planning approach will be implemented to the greatest degree possible.

The PA 2002 focuses on enhancing fish and wildlife *habitat*, modifying *hydro* operation and structures, and reforming *hatcheries* to both increase listed stock populations and provide harvest opportunities in the long-term. It gives priority to improving water quality and habitat for ESA-listed stocks of fish over economic activity, stopping short of breaching dams. It emphasizes human management, in a least-cost manor, to recover listed species and restore and maintain sustainable populations of fish and wildlife, while recognizing that ultimately the fate of the listed species may be significantly determined by weather and ocean conditions rather than human action.

The principal guidance for this Policy Direction in regard to using the unified regional planning approach comes from the Federal Caucus' Basinwide Strategy, the 1- and 5-year implementation planning and progress reporting efforts of the three Federal Action Agencies (a subset of the Federal Caucus) for the FCRPS, the Council's 2000 Fish and Wildlife Program, Tribal Vision, and the Corps' 2002 Record of Decision on the Lower Snake River Juvenile Salmon Migration Feasibility Study. For example, the Basinwide Strategy states, "This paper [Basinwide Strategy] presents the federal government's recommendations for actions needed to recover threatened and endangered salmon and steelhead in the Columbia River Basin. It is designed to complement the recovery plans

[19] The dam breaching aspects under the Weak Stock Focus alternative are not part of the PA 2002. See Corps 2002c.

for resident fish and other aquatic species, and builds on actions already taking place to recover these species. … The actions recommended are presented as a Strategy, not a menu."[20] The annual 2002 Implementation Plan states, "Both the 5-year plans and the 1-year plans address measures to be undertaken by the Action Agencies *only*, with primary focus on *endangered fish*. … While some of the projects may not respond directly to an RPA [reasonable and prudent alternative] action, the Action Agencies intend to include relevant projects to benefit ESA-listed fish in the overall Plan to coordinate ongoing and new projects."[21] The Corps, one of the Action agencies, in a key decision on the lower Snake River hydro operations, gives guidance and further confirms its commitment to use the Implementation Plans by stating, "The Corps will rely on the annual and 5-year plans as the mechanism to implement the action items in the recommended plan (preferred alternative) described in the FR/EIS."[22] The Council's Program states, "The vision for this program is a Columbia River ecosystem that sustains an abundant, productive, and diverse community of fish and wildlife, mitigating across the basin for the adverse effects to fish and wildlife caused by the development and operation of the hydrosystem and providing the benefits from fish and wildlife valued by the people of the Region. This ecosystem provides abundant opportunities for tribal trust and treaty right harvest and for non-tribal harvest and the conditions that allow for the recovery of the fish and wildlife affected by the operation of the hydrosystem and listed under the Endangered Species Act."[23]

All of the documents mentioned above agree that coordinated efforts by governments and organizations in the Pacific Northwest are necessary. The FCRPS agencies intend to reduce adverse fish and wildlife impacts resulting from their actions. The Basinwide Strategy states, "The federal agencies cannot solve the problem alone, or acting unilaterally. Additional and strong action by state and tribal governments, local authorities, and other participants must occur for recovery success."[24] The Action Agencies' 2002 Implementation Plan states, "Many of the RPA objectives require that coordination take place with outside parties and their respective programs, processes, and plans …."[25] In addition the Council states, "Council's program is designed to link to, and accommodate, the needs of other programs in the basin that affect fish and wildlife."[26]

To further complement the work of the Federal Caucus, FCRPS Action Agencies, and the Council, the EIS Team also extensively consulted the Governors' Recommendations and the Tribal Vision. The Governors' Recommendations state, "In order to succeed, the Region must have the necessary tools including a clear and comprehensive plan, adequate time, and sufficient funding."[27] The Governors' Recommendations continue by stating,

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[20] Federal Caucus 2000b, pp. 1-2.

[21] USDOI/Bureau, Corps, and BPA 2001b, pp. 1-2.

[22] Corps 2002c, p.6.

[23] Council 2000d, p. 13.

[24] Federal Caucus 2000b, p. 2.

[25] USDOI/Bureau, Corps, and BPA 2001b, p. 3.

[26] Council 2000d, p. 10.

[27] Governors' Recommendations 2000, p. 1.

"… the goal we suggest is protection and restoration of salmonids and other aquatic species to sustainable and harvestable levels meeting the requirements of applicable statutes, including the Endangered Species Act, the Clean Water Act, the Northwest Power Act, and tribal rights under treaties and executive orders while taking into account the need to preserve a sound economy in the Pacific Northwest."[28]

The Tribal Vision notes, "For the tribes, there has always been a common understanding—that their very existence depends upon their respectful enjoyment of the Basin's rich and vast land and water resources. … Tribal people believe that there is no distinction between *natural* resources and *cultural* resources—*all* are necessary for culture, economy, religion and a way of life to be expressed, practiced and maintained."[29]

Where there are Key Issues not specifically addressed in the above referenced documents, BPA was guided by the overall themes of the associated Weak Stock and Sustainable Use Policy Directions, other regional fish and wildlife processes, and public input to determine the remaining aspects of the PA 2002. For example, as part of the ICBEMP process, a strategy was recently adopted for implementation. It states in the vision of the strategy, "[t]hat agency personnel will work with the public, involved regulatory agencies and tribal governments, State and local governments, and the science community to conserve rare ecosystems, restore degraded ecosystems, and provide benefits to people within the capabilities of the land."[30] The press release for the Strategy succinctly captures the meaning of this vision state the, "…goal is to manage public lands in the Interior Columbia Basin to meet community needs for goods and services in an ecologically sustainable way."[31]

The Philosophy Behind the PA 2002 Policy Direction:

> *"Our goal is to arrive at a "unified plan"—a set of common understandings and actions that enjoy a wide base of regional support and commitment. The Action Agencies believe that there is much common ground between the 2002–2006 5-Year Plan and the various regional recommendations and programs for salmon recovery, …." (USDOI, Corps, and BPA, 2002 Annual Implementation Plan)*[32]
>
> *"… Recovery must provide for immediate, emergency needs of the fish, but also commitment for the long-term. Recovery must operate across multiple jurisdictions—five states, two nations, and numerous Indian tribes. Recovery must meld the needs of the anadromous and resident fish, listed and non-listed fish, and hatchery and wild fish. Through all of these challenges, recovery must deal with human actions, yet strive to restore some semblance of the natural conditions and*

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[28] Governors' Recommendations 2000, p. 2.

[29] CRITFC 1999, pp. 1-2.

[30] USDA/USFS and USDOI/BLM 2003

[31] USDA/USFS and USDOI/BLM 2003

[32] USDOI/Bureau, Corps, and BPA 2001a, p. 3.

functions that support wild fish." (USDOI, Corps, and BPA, 2002-2006 Implementation Plan)[33]

"It is the federal government's role to administer the Endangered Species Act and to uphold tribal trust responsibilities. But the states also have an important role and responsibilities, as do other regional entities. Agreement on a regional approach, consisting of specific federal, state and regional plans that protect both our salmon and our communities, should be reached and accepted by federal and state officials in consultation with tribal leaders …." (Governors Recommendations)[34]

"Under the Northwest Power Act, the Council's fish and wildlife program is not intended to address all fish and wildlife problems in the basin from all sources. But the Council adopted the vision, objectives, strategies and scientific foundation with the belief that they will complement and help support other fish and wildlife recovery actions in the region." (Council's 2000 Fish and Wildlife Program)[35]

"There are gaps and unavoidable uncertainties associated with the science. Therefore, the Strategy calls for a comprehensive research monitoring and evaluation program to reduce those uncertainties that are critical to future decisions regarding salmon and steelhead recovery, while providing information for needed adjustments to future strategies." (Federal Caucus, Basinwide Strategy)[36]

"The tribal vision for the future of the Columbia River Basin is one in which people return to a more balanced and harmonious relationship with the environment." (CRITFC, Tribal Vision)[37]

The PA 2002 is a blend of Policy Directions (as noted above, primarily the ***Weak Stock*** and ***Sustainable Use*** Focus Policy Directions) that emphasizes the need to recover ESA-listed fish while trying to preserve the economy and work cooperatively with human actions and activities affecting that resource. This PA 2002 emphasizes "… working with the governments and people of the region to upgrade the FCRPS, to protect and enhance fish habitat, to reform hatcheries, and to rebuild harvestable fish runs."[38]

Differences from Status Quo Implementation Actions:[39]

- Increases enhancement of fish habitat (e.g., increases tributary streamflow, removes passage barriers, protects high-quality habitat, and screens irrigation diversions) to improve fish productivity and, where blocked areas remain, uses substitution of resident fish species as mitigation. Replacement of wildlife habitat lost to hydro development will continue in areas where full mitigation has not yet

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33 USDOI/Bureau, Corps, and BPA 2001, p. 4.

34 Governors, Pacific Northwest States 2000, p. 17.

35 Council 2000d, Introduction section, p. 10.

36 Federal Caucus 2000b, Conservation of Columbia Basin Fish: Final Basinwide Salmon Recovery Strategy (Basinwide Strategy). December, p. 2.

37 CRITFC 1999, p. 2.

38 USDOI, Corps, and BPA 2001a, p. 4.

39 Federal Caucus 2000b, pp. 4-8.

been achieved. *(Note: The Council's subbasin planning process and Provincial Reviews can be used to provide focus and discipline to our identification of desirable "offsite" improvements and RM&E projects and the information from this planning and review process will be implemented as appropriate based on its conclusions.)*

- Focuses on achieving biological performance standards in the mainstem of the Federal hydrosystem, and developing and achieving biological performance standards for protection and enhancement of fish and wildlife habitat that is not on the mainstem (i.e., offsite).
- Increases overall harvest through transition to selective fisheries to reduce impacts to listed and weak fish stocks.
- Increases tribal harvest through selective fisheries.
- Reforms hatcheries to both reduce risks to wild fish while continuing to supplement harvest and contribute to recovery of ESA-listed stocks by acting as a safety net to avoid extinction (e.g., reform hatcheries to focus on genetic management and conservation[40]).
- Increases adult and juvenile fish survival at dams (e.g., changes in flow, spill, passage, and water quality) to meet biological performance standards.
- Increases opportunities for commercial activity except where priority is given to ESA-listed species (e.g., zoning changes for residential/commercial/industrial development, restrictions on water usage for commercial/industrial purposes, and recreational sport fishing and hunting).

3A.1 Assessment of PA 2002

BPA committed to evaluate the ongoing fish and wildlife efforts throughout the Region before determining a preferred alternative Policy Direction. BPA also committed to consider the information from the public process that was completed on this EIS. The BPA Administrator has honored both commitments in selecting a preferred alternative. PA 2002 reflects a culmination of fish and wildlife policy from many different regional guidance sources as of 2002. Clearly, BPA has used a unified planning approach to reach a comprehensive and cumulative assessment of the PA 2002. For a more complete description of the PA 2002, see Section 3.2.8.

The PA 2002 substantially represents a blend of the ***Weak Stock Focus*** and ***Sustainable Use Focus*** Policy Directions. This combination of Policy Directions best reflects BPA's goal of implementing a Policy Direction that, to the maximum extent practicable, is feasible, is scientifically sound, and uses a unified planning approach. It accounts for the vast differences of opinions and values throughout the Region, the degree of scientific uncertainty that still surrounds fish and wildlife mitigation and recovery, and the difficulty of bringing together the diverse authorities and obligations of Federal, state, and tribal entities. Some readers will likely perceive little difference between the

[40] USDOI/Bureau, Corps, and BPA 2001a, p. 25.

PA 2002 (Preferred Alternative) and Status Quo, while others will see it as a sizable change.

3A.2 Summary of the Environmental Consequences of PA 2002

The environmental consequences of the PA 2002 are summarized in Table 3A-1 below. Like the base Policy Directions, the PA 2002 has been compared to the Status Quo. A discussion of the environmental consequences for each effect category follows in Tables 3A-2 through 3A-12.

3A.3 Environmental Consequences of PA 2002

This section consists of tables (Tables 3A-2 through 3A-12) organized by effect areas to allow for conveniently comparing the impacts of PA 2002 to Status Quo. Each of these broad effect areas is broken into subcategories for analysis. For each effect area category or subcategory, the affected environment is briefly summarized in terms of existing conditions. Next, the environmental conditions under the Status Quo Policy Direction are briefly described. Then, the environmental conditions under PA 2002 are described. The environmental effects analysis considers both the short and long term.

Each effect area is first summarized in a table, broken down by the environmental consequences on each subcategory, when applicable. Shading is used to quickly show the reader whether the Policy Direction results in *much worse, worse, the same, better or much better conditions* relative to the Status Quo policy. For the Natural Environment, the environmental consequences are described in terms of the effects on fish and wildlife. For the Economic Environment and Social Environment, the human perspective is considered in describing the environmental consequences. Following each table, the environmental consequences are summarized for PA 2002.

The environmental consequences for each effect area are followed by **Regional Guidance**. Regional Guidance is made of broad statements taken from several of the key documents BPA considered in determining its PA 2002. These documents represent the views of several Federal agencies (including the Action Agencies), the Northwest Power Planning Council, recommendations from the governors of the affected states, and Tribal interests. As previously discussed, BPA considered much more than the information in the Regional Guidance documents prior to determining its PA 2002; however, these documents serve as important indicators of regional concerns. The Sample Implementation Actions in Volume 3 provide further examples of actions the Regional Guidance documents offered for consideration in implementing a strategy or policy.

Table 3A-1: Comparison of the Alternatives Including the Preferred Alternative*

Effect Area	Status Quo*	Natural Focus	Weak Stocks	PA 2002	Sustain-able Use	Strong Stocks	Com. Focus
NATURAL ENVIRONMENT							
Air Quality							
Land Habitat							
Upland							
Riparian/Wetland							
Water Habitat							
Nitrogen Supersaturation							
Non-Thermal Pollution							
Sedimentation**							
Temperature/Dissolved Oxygen							
Instream Water Quantity							
Amount Stream/River Habitat							
Reservoir Habitat							
Fish and Wildlife							
Naturally-spawning Native Anadromous Fish							
Hatchery-produced Native Anadromous Fish							
Native Resident Fish							
Native Wildlife							
Non-Native Species***							
SOCIAL AND ECONOMIC ENVIRONMENTS							
Commerce							
Recreation							
Economic Development							
Funding Costs							
Tribes							
Fish Harvest							
Health, Spirituality, and Tradition							
Cultural/Historic Resources							
Aesthetics							

* Status Quo = Baseline conditions. For more information on existing conditions, please see Section 5.1.

** The sedimentation evaluation is based on long-term effects. It should be noted that the short-term effects under Natural Focus and Weak Stock from dam breaching would be much worse than those conditions under Status Quo.*** Under this analysis fewer non-native species is considered "better". For a complete discussion, see Chapter 5.

*** Under this analysis fewer non-native species is considered "better". For a complete discussion, see Chapter 5.

Much Better	Better	Same	Worse	Much Worse

The short and full citations for each of these key Regional Guidance documents are:

Key Document Full Citation	Regional Guidance Short Citation
Federal Caucus. 2000b. Conservation of Columbia Basin Fish: Final Basinwide Salmon Recovery Strategy. December.	**Basinwide Salmon Recovery Strategy**
USDOI/Bureau, Corps, and BPA. 2001a. Endangered Species Act Implementation Plan for the Federal Columbia River Power System. [known as the 5-Year Implementation Plan]. Summer.	**Draft Action Agency ESA 2002-2006 Implementation Plan**
Corps. 2002c. Record of Decision: Lower Snake River Juvenile Salmon Migration Feasibility Study. September	**Corps 2002 LSR ROD**
Council. 2000d. 2000 Columbia River Basin Fish and Wildlife Program. Council Document 2000-19.	**Council's 2000 Fish and Wildlife Program**
Governors, Pacific Northwest States. 2000. Recommendation for the Protection and Restoration of Fish in the Columbia River Basin. July.	**Governors' Recommendations**
Columbia River Inter-Tribal Fish Commission. 1999. The Tribal Vision for the Future of the Columbia River Basin and How to Achieve It.	**Tribal Vision**

Tables Key:

Much Better	Better	Same	Worse	Much Worse

3A.3.1 Natural Environment

The natural environment effect areas include air quality, land habitat, water habitat and fish and wildlife. Land is further broken into upland habitat (amount and quality) and riparian/wetland habitat (amount and quality). Water is divided into numerous subcategories: nitrogen supersaturation, non-thermal pollution, sedimentation, temperature/dissolved oxygen, instream water quantity, amount of stream/river habitat, and reservoir habitat. Fish and wildlife is also broken into subcategories: naturally-spawning and hatchery-produced anadromous fish, native resident fish, native wildlife, and non-native species.

AIR QUALITY

Table 3A-2: Air Quality Effects Comparison of PA 2002

AIR QUALITY fewer emissions = better	Status Quo	PA 2002
CO		
CO_2		
NO_x		
PM10		
SO_2		

Existing Conditions: With regard to fish and wildlife, the major concerns for existing air quality conditions are emissions from transportation and energy generation. Emissions of major concern are carbon monoxide (CO), carbon dioxide (CO_2), nitrogen oxides (NO_x), particulate matter (PM_{10}), and sulfur dioxide (SO_2).

Status Quo: Relative to existing air conditions, the Status Quo Policy Direction is expected to include some increase in air pollutants associated with additional economic growth. The increase in air emissions would be regulated by existing pollution abatement programs and technological improvements, such as those under the Clean Air Act.

PA 2002: The changes from modifying hydro operations to benefit listed species (such as those suggested in the 2000 NMFS and FWS BiOps for the FCRPS) are not expected to affect air emissions much, if at all, because replacement power generation would not likely be needed. No change is expected from increased road and rail transportation to replace barging, as dams would not be breached. Air quality is not likely to change compared to conditions under Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy

"Minimize Adverse Effects on Humans. Implement salmon and steelhead conservation measures in ways that minimize their adverse socio-economic and other human effects." (p. 33)

Governors' Recommendations

"We acknowledge that the Columbia and Snake River hydropower system has been improved for fish passage. … we support further modifications to the configuration and operation of the hydrosystem where appropriate and necessary to benefit fish and so long as the modifications do not jeopardize the Region's reliable electricity supply." (p. 8)

LAND HABITAT

Table 3A-3: Land Habitat Effects Comparison of PA 2002

LAND HABITAT	Status Quo	PA 2002
UPLAND HABITAT AMOUNT AND QUALITY **more quality habitat = better**		
RIPARIAN/ WETLAND HABITAT AMOUNT AND QUALITY **more quality habitat = better**		

Existing Conditions: With regard to fish and wildlife, the most important land and land use issues concern the potential loss of and adverse impacts to habitat from human activities. The use or development of some habitat is controlled or limited by regulation. Land habitats are fragmented and degraded by urban development, grazing, mining, timber harvest, transportation, recreation, hydro development, stream channelization, and introduction of exotic species.

Status Quo: Native habitat and agricultural lands are being developed to meet urban growth needs. Although some upland and wetland habitat is being improved, development of upland and riparian areas continues to decrease habitat. Mitigation efforts have focused on protecting, enhancing, and managing land habitat, but the trend is toward increased habitat fragmentation.

PA 2002: A balanced management approach that considers habitat needs for both listed and non-listed fish and wildlife would be used. Substantial human intervention would be necessary to protect habitat and enhance degraded habitat for ESA-listed fish and wildlife, especially in areas designated as critical habitat. A variety of habitat protection and enhancement mechanisms would be used to increase the amount and quality of both upland and riparian/wetland habitats. These mechanisms could include purchase of conservation easements, fee title acquisitions, riparian fencing, and cost sharing with other Federal agencies under various agricultural incentive programs, to protect important habitat features for listed species. Habitat protection and enhancement efforts would use a "watershed" or "ecosystem" approach, i.e., a more comprehensive look at a subbasin and its biological needs. Implementation of habitat protection and enhancement projects in any particular watershed or subbasin would result in benefits to all species located within that watershed or subbasin regardless of the species targeted. Habitat protection and enhancement efforts would result in an increase in the amount of high-quality habitat. Overall, more habitat for ESA-listed species, as well as habitat for non-listed species, would be protected and enhanced than under the Status Quo.[41]

Regional Guidance:

Basinwide Salmon Recovery Strategy

"Protect existing high quality habitats." (p. 33; Draft Action Agency ESA 2002-2006 Implementation Plan, p. 9)

"Restore habitats on a priority basis." (p. 9)

[41] Due to possible changes in flows and spill some planned transmission construction projects could accelerate from the development over Status Quo. The land impacts of building new transmission would occur sooner but would likely not be different than Status Quo.

Draft Action Agency ESA 2002-2006 Implementation Plan

"Conserve critical habitats upon which salmon, steelhead, bull trout, sturgeon, and other aquatic species depend, including watershed health." (p. 9)

Council's 2000 Fish and Wildlife Program

"Wherever feasible, this [Fish and Wildlife] program will be accomplished by protecting and restoring the natural ecological functions, habitats, and biological diversity of the Columbia River Basin…. Where impacts have irrevocably changed the ecosystem, the program will protect and enhance the habitat and species assemblages compatible with the altered ecosystem" (p. 13)

Governors' Recommendations

"Protecting and recovering salmonids and other aquatic species requires protecting land on and around fish-bearing streams." (p. 5)

WATER HABITAT

The Water Habitat Effect area has been further broken down into, and evaluated by, the following subcategories:

- Nitrogen Supersaturation
- Non-Thermal Pollution
- Sedimentation
- Temperature/Dissolved Gas
- Instream Water Quantity
- Amount of Stream River Habitat
- Reservoir Habitat

More often than not, the Regional Guidance documents make broad policy direction statements regarding water habitat that can be applied to more than one of the subcategories. In an effort to eliminate repetitiveness within the overall Water Habitat Effects section, the following Regional Guidance list conglomerates the most commonly used Regional Guidance directives with the appropriate subcategories. For example, the Governors' Recommendations called for increased operational reliability, which applies to both nitrogen supersaturation and non-thermal pollution. For this Water Habitat Effects section, Regional Guidance statements unique to each subcategory are listed below the respective PA 2002. Otherwise, the common Regional Guidance objectives can be found listed below:

Regional Guidance Compilation for Water Habitat Effects:

Basinwide Salmon Recovery Strategy

"In the long term, attain state and tribal water quality standards in all critical habitats in the Columbia River and Snake River basins." (p. 33; Draft Action Agency ESA 2002-2006 Implementation Plan, p. 9) (Applies to: *Nitrogen supersaturation, Non-thermal pollution, Sedimentation, Temperature/Dissolved oxygen, Instream water quantity*)

"Prevent further degradation of tributary, mainstem and estuary habitat conditions and water quality." (p. 33; Draft Action Agency ESA 2002-2006 Implementation Plan, p. 9) (Applies to: *Nitrogen supersaturation, Non-thermal pollution, Sedimentation, Temperature/Dissolved oxygen, Instream water quantity, Amount of stream/river habitat, Reservoir habitat*)

"Conserve Ecosystems. Conserve the ecosystems upon which salmon and steelhead depend, including watershed health." (p. 33) (Applies to: *Non-thermal pollution, Sedimentation, Temperature/Dissolved oxygen, Instream water quantity, Amount of stream/river habitat, Reservoir habitat*)

Draft Action Agency ESA 2002-2006 Implementation Plan

"Conserve critical habitats upon which salmon, steelhead, bull trout, sturgeon, and other aquatic species depend, including watershed health." (p. 9) (Applies to: *Nitrogen supersaturation, Non-thermal pollution, Sedimentation, Temperature/Dissolved oxygen, Instream water quantity, Amount of stream/river habitat, Reservoir habitat*)

Council's 2000 Fish and Wildlife Program

"Wherever feasible, this [Fish and Wildlife] program will be accomplished by protecting and restoring the natural ecological functions, habitats, and biological diversity of the Columbia River Basin…. Where impacts have irrevocably changed the ecosystem, the program will protect and enhance the habitat and species assemblages compatible with the altered ecosystem." (p. 13) (Applies to: *Amount of stream/river habitat, Reservoir habitat*)

Table 3A-4: Water Habitat Effects Comparison of PA 2002

WATER HABITAT	Status Quo	PA 2002
NITROGEN SUPERSATURATION **less = better**		

Existing Conditions: The main issue for fish concerning Nitrogen Supersaturation (also called Total Dissolved Gas or TDG) is increased fish mortality due to gas bubble trauma (GBT) caused by high levels of dissolved gas. TDG is caused by spill over large dams. The problem is cumulative as the river flows over each of the dams. Many existing structures are not designed to minimize TDG.

Status Quo: TDG is being managed by controlled flow and spill operations, as well as spillway modifications. Some excessive voluntary spill operations for weak stocks and spring migrations may continue to cause TDG problems. Attempts to manage spill at dams so that gas levels are within Federal clean water guidelines will be partially successful, except in high-flow years. The dissolved gas abatement structures should assist in lowering current TDG.

PA 2002: Significant actions are already being taken to reduce TDG; spill and flow regimes would be modified to ensure compliance with local clean water standards. The dams, although not breached, would receive additional structural improvements (such as spillway flow deflectors, modifications to existing spillway flow deflectors, and pier wall extensions) to benefit weak stocks of fish. However, TDG, a problem even with improvements, would likely be about the same as under Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy

See above: Regional Guidance Compilation for Water Habitat Effects

Draft Action Agency ESA 2002-2006 Implementation Plan

See above: Regional Guidance Compilation for Water Habitat Effects

Corps 2002 LSR ROD

"The recommended plan … structural and operational measures … are intended to ... reduce TDG, and improve operational reliability. (p. 14)

Governors' Recommendations

"Priority capital improvements must also include those necessary to address water quality issues relating to both temperature and dissolved gas." (p. 8)

WATER HABITAT	Status Quo	PA 2002
NON-THERMAL POLLUTION **less = better**		

Existing Conditions: The main concerns for fish and wildlife regarding non-thermal pollution include direct adverse physiological effects and habitat degradation. Sources of non-thermal pollution include municipal and industrial wastewater, run-off from mines, and non-point sources such as irrigation return flows, agricultural runoff, and stormwater. Non-thermal pollution can include excesses of organic matter, fertilizers, pesticides, sediment, and numerous metals and chemicals. These pollutants can impair water quality and designated uses of specific water bodies.

Status Quo: Increasing population and economic growth produces additional pollution, but existing and planned regulations and programs, technological improvements for new industry, and decline of old industries all combine to reduce pollution. The net effect is that pollution increases from existing levels, but would continue to be regulated.

PA 2002: Positive incentives, monitoring, and enforcement would be used to help reduce both point and non-point sources of pollution. Regional entities would continue to work toward attainment of state and Federal water quality standards for non-thermal pollution throughout the Region pursuant to the CWA, especially in critical habitat. In addition, there would be management for multiple purposes to protect and enhance other habitat to promote recovery of listed species and maintain harvestable populations of fish and wildlife. Overall, there would be less non-thermal pollution than Status Quo, as the standards are applied region-wide.

Regional Guidance:

Basinwide Salmon Recovery Strategy

See above: Regional Guidance Compilation for Water Habitat Effects

Draft Action Agency ESA 2002-2006 Implementation Plan

See above: Regional Guidance Compilation for Water Habitat Effects

WATER HABITAT	Status Quo	PA 2002
SEDIMENTATION **less = better**		

Existing Conditions: With respect to fish and wildlife, the main concerns regarding sedimentation involve the potential degradation of aquatic habitat and the related adverse effects of soil erosion on terrestrial habitat. Sedimentation from erosion results from land disturbances (including agriculture, grazing, logging, urban development), and river disturbance such as dredging. Sediment is captured and accumulates behind dams. In addition to degrading habitat, sedimentation has negative effects on certain species during various stages of their lifecycles.

Status Quo: Large sediment loads are deposited into the river system throughout the Basin. Although an increase in urbanization may result in more sedimentation, other changes in land-use practices (conversion to more permanent crops, agricultural and grazing management, and practices to control erosion during construction) could compensate. The Region could experience gradual improvement as current water quality standards, BMPs, and new TMDLs are applied across the land base.

PA 2002: Erosion and sedimentation would be reduced throughout the Basin as part of a more active land use and water management strategy. Weak stock habitat would be emphasized. Enhancing and managing habitat (e.g., ensuring the availability of spawning gravel, providing streambank stabilization and managing riparian habitat) might have temporary, adverse effects, but would result in the long-term stabilization of ground surfaces, decreasing sedimentation. Overall, sedimentation in some areas would be somewhat less compared to Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy
See above: Regional Guidance Compilation for Water Habitat Effects

Draft Action Agency ESA 2002-2006 Implementation Plan
See above: Regional Guidance Compilation for Water Habitat Effects

WATER HABITAT	Status Quo	PA 2002
TEMPERATURE/ DISSOLVED OXYGEN **lower temperature = better**		

Existing Conditions: Non-optimal water temperatures and low dissolved oxygen (DO) levels are major concerns for fish and wildlife management efforts. Water temperatures and low dissolved oxygen are seasonal problems for all fish in the mainstems and tributaries. Water temperature is a critical parameter affecting salmonid migration. Water temperatures affect DO levels. Adequate dissolved oxygen concentrations are important to fish, invertebrates, and other aquatic life. Mainstem changes in water temperature and DO levels are associated with dry years, low flows, long water retention times in reservoirs, and warm weather. Thermal pollution from industrial discharges also could contribute. Problems in tributaries could be linked to irrigation diversion quantity and timing, low storage releases, altered channel geometry, increased solar radiation through loss of riparian and streambank shading, and irrigation return flows.

Status Quo: Cooler water from within the Dworshak reservoir is released during the summer months for temperature control with diminishing benefits downstream on the Snake River. State water quality standards vary throughout the Region. Revised regional water quality standards and TMDLs for impaired watersheds should result in gradual improvement. Water temperature/dissolved oxygen conditions could be affected by global warming.

PA 2002: To ensure compliance with revised regional water quality standards and TMDLs for impaired watersheds, efforts would focus on reducing water temperatures in tributaries. Actions might include system-wide irrigation water management, retention, and reuse of irrigation return flows, and active streambed and riparian management to increase shading at strategic reaches and habitat features. Actions reducing water temperature in tributaries would have little immediate effect on the mainstem. Temperature control structures or improved mixing zones and cold water releases on mainstem and upstream tributary facilities might help. Improvements would be focused where weak stocks are correlated with impaired water quality. Overall, temperature and DO would likely be about the same or slightly better than under Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy
See above: Regional Guidance Compilation for Water Habitat Effects

Draft Action Agency ESA 2002-2006 Implementation Plan
See above: Regional Guidance Compilation for Water Habitat Effects

Governors' Recommendations
"Priority capital improvements must also include those necessary to address water quality issues relating to both temperature and dissolved gas." (p. 8)

WATER HABITAT	Status Quo	PA 2002
INSTREAM WATER QUANTITY **more = better**		

Existing Conditions: With respect to fish and wildlife, the main concern regarding instream water quantity is the loss of habitat caused by water withdrawals during summer months, when water levels are at their lowest. Water withdrawals for storage, irrigation, consumption, and groundwater storage reduce the amount of river and stream flow and habitat. Tributaries, more arid areas, and areas upstream of the lower Snake River dams experience the most substantial adverse effects from water withdrawals.

Status Quo: Water quantity problems (as a result of withdrawing water for irrigation, urban and other uses) are a major cause of habitat degradation and reduced fish production. Existing programs to manage storage releases and acquire water supplies from irrigation would continue. Development of new surface-water irrigation is somewhat limited by state permit systems. Water conservation programs to increase efficient use of water (such as irrigation management, more efficient irrigation systems, and information systems) would reduce per acres water application.

PA 2002: Water withdrawals would be managed to reduce or avoid adverse effects, primarily through the use of more efficient technology and water conservation programs. For example, water rights acquired from irrigated lands in riparian zones would be dedicated to instream use to benefit fish and wildlife, especially listed species. Some storage would be used to increase flows during fish migrations. In some areas, there would be more instream water than under Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy
See above: Regional Guidance Compilation for Water Habitat Effects

Draft Action Agency ESA 2002-2006 Implementation Plan
See above: Regional Guidance Compilation for Water Habitat Effects

Governors' Recommendations
"… we recommend federal assistance and support be made available to the states to better coordinate these timelines and, where necessary, to accelerate water quality improvements and to establish instream flows that benefit listed aquatic species in the Columbia Basin." (p. 4)

"We support voluntary exchanges to obtain needed water for fish and support the development of water markets to effect exchanges among willing buyers and sellers. … we are committed to support changes in state law or policies to facilitate this approach. We also recognize existing efforts to conserve water and support further assistance to promote conservation." (p. 4)

WATER HABITAT	Status Quo	PA 2002
AMOUNT OF STREAM/RIVER HABITAT **more = better**		

Existing Conditions: The amount of stream/river habitat, a function of water quantity, is a major concern for fish and wildlife management efforts. The quality and quantity of freshwater habitat in much of the Columbia River Basin have declined dramatically in the last 150 years. Activities such as logging, farming, grazing, road construction, mining, and urbanization have changed the historical habitat conditions in the Basin by creating passage obstacles. The amount of habitat is also related to the highly regulated nature of the river.

Status Quo: Purchasing/leasing water rights from irrigators increases the amount of stream and river habitat. Some tributaries still lose habitat during dry months or low water years. Other actions taken are similar to those under instream water quantity.

PA 2002: Increases in instream water quantity through the purchase or lease of water rights would create some increase in habitat, especially in the tributaries. Flow augmentation throughout the drier months could increase the amount of habitat available during that time. Currently degraded river/stream habitat would be protected and enhanced to benefit listed species. There would likely be more stream/river habitat compared to the Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy
"Protect existing high quality habitats." (p. 2; Draft Action Agency ESA 2002-2006 Implementation Plan, p. 9)

"Restore habitats on a priority basis." (p. 33; Draft Action Agency ESA 2002-2006 Implementation Plan, p. 9)

Draft Action Agency ESA 2002-2006 Implementation Plan
See above: Regional Guidance Compilation for Water Habitat Effects

Council's 2000 Fish and Wildlife Program

See above: Regional Guidance Compilation for Water Habitat Effects

Governors' Recommendations

"The region should attempt to obtain substantial additional habitat protections in the locations that promise the greatest benefits for fish."

WATER HABITAT	Status Quo	PA 2002
RESERVOIR HABITAT **more = better**		

Existing Conditions: The main issue for fish and wildlife management concerning reservoir habitat is the potential increase or decrease in available habitat based on reservoir operation. Reservoir operations can affect water temperature, velocity, and sedimentation. Reservoirs provide surface and water column habitat for certain species of fish and wildlife. The amount of reservoir habitat is determined by dams in place and their associated storage and operations. Habitat can be lost because of irrigation and domestic use withdrawals, drought, and flow modifications to the hydro system. Reservoirs can adversely affect anadromous fish species by extending travel time and decreasing survival rates.

Status Quo: Reservoir habitat fluctuates seasonally to allow for improved anadromous fish migrations, and in response to irrigation and domestic use withdrawals. Water withdrawals potentially result in lost reservoir habitat. Federal Biological Opinions outline actions to be implemented relating specifically to reservoir management. Some water rights have been obtained through leases to be used for instream benefits.

PA 2002: The amount of reservoir habitat could fluctuate slightly from changes in flow management intended to benefit fish and wildlife. The fluctuations could be more dramatic when such changes are being made to support listed species. Water rights acquired from irrigated lands and water left instream for fish and wildlife could temporarily increase the amount of reservoir habitat; however, some storage would be used to increase flows during fish migrations. Overall the amount of reservoir habitat would be about the same as Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy

See above: Regional Guidance Compilation for Water Habitat Effects

Draft Action Agency ESA 2002-2006 Implementation Plan

See above: Regional Guidance Compilation for Water Habitat Effects

Council's 2000 Fish and Wildlife Program

"Systemwide water management, including flow augmentation from storage reservoirs, should balance the needs of anadromous species with those of resident fish species in upstream storage reservoirs so that actions taken to advance one species do not unnecessarily come at the expense of other species." (p. 14)

Tribal Vision

"Manage water resources to more closely mimic the natural, historic river hydrograph … but maintain, to the maximum extent practicable, full, stable water levels in … reservoirs according to their Integrated Rule Curves and consistent with the Northwest Power Planning Council's Fish and Wildlife Program" (p. 6)

Corps 2002 LSR ROD

"The Corps intends to take actions in accordance with the 2001 ROCASOD [2001 Record of Consultation and Statement of Decision] and NMFS and USFWS 2000 Biological Opinions, continuing coordination with NMFS and USFWS and consultation, as may be required, to meet the adaptive management approach for the Lower Snake River Project." (p. 1)

"The Corps will rely on the annual and 5-year plans as the mechanism to implement the action items in the recommended plan (preferred alternative) described in the FR/EIS. The majority of the structural and operational items included in the recommended plan (preferred alternative) are addressed in the RPAs of the NMFS and USFWS 2000 Biological Opinions." (p. 6)

FISH AND WILDLIFE

Table 3A-5: Fish and Wildlife Effects Comparison of PA 2002

FISH AND WILDLIFE	Status Quo	PA 2002
NATURALLY-SPAWNING NATIVE ANADROMOUS FISH **more fish = better**		
HATCHERY-PRODUCED NATIVE ANADROMOUS FISH **more fish = better**		

Existing Conditions: The main concerns regarding native anadromous fish include ocean conditions, loss of habitat, over-harvest, and historical hydro operations. Also there is some concern that hatchery-produced anadromous fish cause problems for naturally-spawning anadromous fish. The proportion of hatchery fish found in the river systems has steadily increased. Many salmon stocks are listed as threatened or endangered, and few naturally-spawning stocks are healthy. Other species of anadromous fish include the Pacific lamprey and some sturgeon.

Status Quo: Major policies shaping salmon management are defined and guided by mitigation requirements, the Regional Act, the ESA, tribal fishing rights, and international treaties. However, there is no unified policy direction among all the interested parties and the science remains unclear. Anadromous fish populations vary erratically, driven by ocean and freshwater harvest, ocean and freshwater survival conditions, and weather cycles. Hatcheries are used primarily to mitigate the effects of the hydro system and support harvest. Some hatcheries, however, are used to meet conservation goals. Efforts are made to protect and enhance habitat. Hydro operations and modifications to improve passage are guided by biological opinions issued by NMFS to benefit listed anadromous fish. Given the numerous parties involved with anadromous fish policy, it is unclear whether salmon populations will increase to sustainable levels.

PA 2002: Efforts would be made to enhance habitat for anadromous fish in order to increase production and maintenance of harvestable levels of anadromous fish. Emphasis would be placed on protecting and enhancing critical habitat for listed anadromous fish. Management of undesirable fish species to benefit anadromous fish could include methods such as changes in angling regulations, physical removal (e.g., nets, traps, or electrofishing), the use of pesticides (e.g., rotenone and antimycin), dewatering, and stream flow augmentation, and habitat manipulation techniques. The hydro system would be modified to further increase passage survival of anadromous fish. Also, increased fish transport would be used to improve survival. Hatcheries would be reformed and managed primarily for conservation/recovery and, where applicable and compatible, compensation/supplementation. Compared to Status Quo, native anadromous fish (both naturally-spawning and hatchery-produced) would increase with habitat, hatchery, hydro, and harvest improvements.

Regional Guidance:

Basinwide Salmon Recovery Strategy

"Conserve Species. Avoid extinction and foster long-term survival and recovery of Columbia Basin salmon and steelhead and other aquatic species." (p. 33)

"Conserve Ecosystems. Conserve the ecosystems upon which salmon and steelhead depend, including watershed health." (p. 33)

"Maintain and improve upon the current distribution of fish and aquatic species, and halt declining population trends within 5–10 years." (p. 33)

"Establish increasing trends in naturally sustained fish populations in each subregion accessible to the fish and for each ESU within 25 years." (p. 33)

"Conserve genetic diversity and allow natural patterns of genetic exchange to persist." (p. 33; Draft Action Agency ESA 2002-2006 Implementation Plan, p. 9)

Draft Action Agency ESA 2002-2006 Implementation Plan

"Avoid jeopardy and assist in meeting recovery standards for Columbia Basin salmon, steelhead, … and other ESA-listed aquatic species that are affected by the FCRPS." (p. 9)

"Establish increasing trends in naturally sustained fish populations in each sub-region accessible to the fish and for each ESA-listed population within a timeframe determined through recovery planning." (p. 9)

"Conserve genetic diversity and allow natural patterns of genetic exchange to persist." (p. 9)

"Ensure that salmon, steelhead, sturgeon, and bull trout conservation measures are integrated with NWPPC Fish and Wildlife Program and balanced with the needs of other native fish and wildlife." (p. 10)

Council's 2000 Fish and Wildlife Program

"Systemwide water management, … should balance the needs of anadromous species with those of resident fish species in upstream storage reservoirs so that actions taken to advance one species do not unnecessarily come at the expense of other species." (p. 14)

"Artificial production can be used, under the proper conditions, to 1) complement habitat improvements by supplementing native fish populations up to the sustainable carrying capacity of the habitat with fish that are as similar as possible, in genetics and behavior, to wild native fish, and 2) replace lost salmon and steelhead in blocked areas." (p. 22)

"Even in degraded or altered environments, native species in native habitats provide the best starting point and direction for needed biological conditions in most cases…. Any proposal to

produce or release non-native species must overcome this strong presumption in favor of native species and habitats and be designed to avoid adverse impacts on native species." (p. 21)

"Achieving the vision requires that habitat, artificial production, harvest, and hydrosystem actions are thoughtfully coordinated with one another. There also must be coordination among actions taken at the subbasin, province, and basin levels, including actions not funded under this program. Accordingly, creating an appropriate structure for planning and coordination is a vital part of this program." (p. 14)

Governors' Recommendations

"… We commit to support a recovery approach designed not only to achieve ESA delisting levels but also to rebuild the runs to levels that support treaty and non-treaty harvest." (p. 10)

"To assist the local planning effort, we recommend that state authorities designate priority watersheds for salmon and steelhead and that plans for these watersheds be developed …." (p. 5)

"... the goal we suggest is protection and restoration of salmonids and other aquatic species to sustainable and harvestable levels meeting the requirements of the Endangered Species Act, the Clean Water Act, the Northwest Power Act and tribal rights under treaties and executive orders while taking into account the need to preserve a sound economy in the Pacific Northwest." (p. 2)

Tribal Vision

"The tribal vision for the future is one where people, fish, wildlife, plants and other natural and cultural resources are once again biologically healthy and self-sustaining…. It not only supports viable and genetically diverse fish and wildlife resources that provide direct benefits to society, through harvest and improved physical health of tribal and non-tribal members, but also nourishes the spirit." (p. 3)

"[Goals and Objectives] Biologically healthy, self-sustaining and harvestable anadromous … protect and restore fish and wildlife and the aquatic and terrestrial ecosystems on which they directly and indirectly depend." (p. 4)

"[Strategies] Reintroduce and restore anadromous fish to rivers and streams that historically supported them, in numbers sufficient to provide for the needs of the ecosystem and people, in perpetuity." (p. 5)

Corps 2002 LSR ROD

"The stated purpose of the Feasibility Study was to evaluate and screen structural alternative measures that may increase the survival of juvenile anadromous fish through the Lower Snake River Project and assist in the recovery of listed salmon and steelhead stocks." (p. 3)

"The Corps concurs with NMFS' determination that the integrated operation of the FCRPS by the three action agencies, in a manner consistent with the NMFS 2000 Biological Opinion, will avoid jeopardy to listed anadromous fish stocks and lead to the survival and recovery of the listed species." (p. 6)

"The Corps has selected Alternative 3 as the recommended plan (preferred alternative). This alternative has … more of a focus on adaptive migration, reflecting the strategies in the NMFS 2000 Biological Opinion. Adaptive migration is an approach that provides greater flexibility to switch between in-river migration and barge or truck transportation as conditions require and as new information becomes available." (p. 12)

"Operations under Alternative 3 – Major System Improvements (Adaptive Migration) would include applicable activities prescribed in the 1995, 1998, and 2000 Biological Opinions to improve juvenile fish passage conditions." (p. 12)

"Based on a thorough examination of the best available biological, economic, social, environmental, and other related information, the Corps has selected … a modified version of Alternative 3 – Major System Improvements (Adaptive Migration), with increased focus on adaptive migration capabilities." (p. 14)

FISH AND WILDLIFE	Status Quo	PA 2002
NATIVE RESIDENT FISH **More fish = better**		

Existing Conditions: The main concerns relating to native resident fish include habitat loss and degradation, competition with and predation from introduced exotic species, and the effects of management focused on the recovery and harvest of anadromous fish. Some native resident species including bull trout, redband trout, mountain whitefish, and white sturgeon are in decline. Other native resident species--such as northern pikeminnow, largescale sucker, and bridgelip sucker--have high populations.

Status Quo: Resident fish encounter continuous pressure from intense efforts to recover anadromous fish, habitat loss or degradation, and non-native species. Other resident species (e.g. northern pikeminnow) have been determined to be undesirable and intense management programs focus on reducing their numbers. Although some native resident fish benefit from habitat restoration and hatchery measures, the priority is largely for anadromous fish.

PA 2002: Measures would be taken to improve conditions for both listed and non-listed resident fish. When possible native resident fish would be prioritized over non-native species. Specific measures taken to improve weak stocks to promote recovery could include the protection and enhancement of weak stock habitat, further modifications and limits on the hydrosystem, and reforming hatcheries with a focus on conservation. Management for resident species could take priority over management for anadromous species in certain areas such as blocked anadromous fish habitat. Management of undesirable fish species to benefit resident fish could include methods such as changes in angling regulations, physical removal (e.g., nets, traps, and electrofishing), the use of pesticides (e.g., rotenone and antimycin), dewatering and stream flow augmentation, and habitat manipulation techniques. Sustainable harvest levels would be achieved through managing predation, human activities, and habitat improvements. There would likely be more native resident species than compared to Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy

"Balance the Needs of Other Species. Ensure that salmon and steelhead conservation measures are balanced with the needs of other native fish and wildlife species." (p. 33)

"Maintain and improve upon the current distribution of fish and aquatic species, and halt declining population trends within 5–10 years." (p. 33)

"Restore distribution of fish and other aquatic species within their native range within 25 years (where feasible)." (p. 33)

Draft Action Agency ESA 2002-2006 Implementation Plan

"Avoid jeopardy and assist in meeting recovery standards for Columbia Basin … bull trout, sturgeon, and other ESA-listed aquatic species that are affected by the FCRPS." (p. 9)

"Ensure that salmon, steelhead, sturgeon, and bull trout conservation measures are integrated with NWPPC Fish and Wildlife Program and balanced with the needs of other native fish and wildlife." (p. 10)

Council's 2000 Fish and Wildlife Program

"Systemwide water management, including flow augmentation from storage reservoirs, should balance the needs of anadromous species with those of resident fish species in upstream storage

reservoirs so that actions taken to advance one species do not unnecessarily come at the expense of other species." (p. 14)

"Artificial production can be used, under the proper conditions, to 1) complement habitat improvements by supplementing native fish populations up to the sustainable carrying capacity of the habitat with fish that are as similar as possible, in genetics and behavior, to wild native fish …" (p. 22)

"Mitigation in areas blocked to salmon and steelhead by the development and operation of the hydropower system is appropriate, and flexibility in approach is needed to develop a program that provides resident fish substitutions for lost salmon and steelhead where in-kind mitigation cannot occur." (p. 21)

"Even in degraded or altered environments, native species in native habitats provide the best starting point and direction for needed biological conditions in most cases…. Any proposal to produce or release non-native species must overcome this strong presumption in favor of native species and habitats and be designed to avoid adverse impacts on native species." (p. 21)

Tribal Vision

"[Goals and Objectives] Biologically healthy, self-sustaining and harvestable … resident fish … protect and restore fish and wildlife and the aquatic and terrestrial ecosystems on which they directly and indirectly depend." (p. 4).

FISH AND WILDLIFE	Status Quo	PA 2002
NATIVE WILDLIFE **more wildlife = better**		

Existing Conditions: The main concerns regarding native wildlife relate to the loss of habitat due to human activities and inter-specific competition with exotic or introduced species. Some species of native wildlife are listed as threatened or endangered, others are substantially diminished in population, while still others have healthy, stable populations. Some wildlife species require undisturbed habitats, and others have flourished in modified habitats. Many species continue to be adversely affected by economic growth, urbanization, and habitat fragmentation.

Status Quo: Listed species are protected and managed through Federal ecosystem management policies and private initiatives. Many non-listed species are regulated and managed by the states for recreational purposes. Native wildlife benefit from actions taken to protect and manage fish and measures taken to mitigate human activities.

PA 2002: More habitat mitigation and better management techniques would be used to enhance production, benefiting listed wildlife species while trying to achieve more stable populations of wildlife. This could include enhancing degraded habitat, improving existing habitat to increase production (e.g., planting food plots), reducing mortality (e.g., construction of avian-friendly facilities), and controlling predators and undesirable species. Management of undesirable wildlife species could include techniques such as relocation of problem individuals or populations, change in hunting regulations, physical removal/deterrence (e.g., shooting, trapping, water spray, and avian predator lines), biological/chemical controls (e.g., sterilization), and habitat manipulation. Impacts on listed and non-listed species would be mitigated through the creation and/or substitution of habitat similar to that lost due to hydropower development. There would be more native wildlife than under Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy

"Balance the Needs of Other Species. Ensure that salmon and steelhead conservation measures are balanced with the needs of other native fish and wildlife species." (p. 33)

"Restore distribution of fish and other aquatic species within their native range within 25 years (where feasible)." (p. 33)

Draft Action Agency ESA 2002-2006 Implementation Plan

"Ensure that salmon, steelhead, sturgeon, and bull trout conservation measures are integrated with NWPPC Fish and Wildlife Program and balanced with the needs of other native fish and wildlife." (p. 10)

Council's 2000 Fish and Wildlife Program

"…. Where impacts have irrevocably changed the ecosystem, the program will protect and enhance the habitat and species assemblages compatible with the altered ecosystem." (p. 13)

"Even in degraded or altered environments, native species in native habitats provide the best starting point and direction for needed biological conditions in most cases…. Any proposal to produce or release non-native species must overcome this strong presumption in favor of native species and habitats and be designed to avoid adverse impacts on native species." (p. 21)

"The Council adopts…funding principles to prioritize among the many needs to address fish and wildlife impacts throughout the basin…" (p. 47)

"Wildlife mitigation should emphasize addressing areas of the basin with the highest proportion of unmitigated losses." (p. 47)

Tribal Vision

"[Goals and Objectives] Biologically healthy, self-sustaining and harvestable … wildlife and other plant and animal populations and communities …. protect and restore fish and wildlife and the aquatic and terrestrial ecosystems on which they directly and indirectly depend" (p. 4)

FISH AND WILDLIFE	Status Quo	PA 2002
NON-NATIVE SPECIES **fewer non-native species = better**		

Existing Conditions: Major concerns for fish and wildlife regarding non-native species are predation, competition for resources, and habitat modification. The introduction of exotic species is a major reason for species decline. Non-native species include fish, mammals, amphibians, reptiles, birds, mollusks, crustaceans, insects, and plant species. There have been some attempts to regulate and prohibit the introduction of undesirable non-native species. Some non-native species, such as small mouth bass and ring-necked pheasant, have become established and are actively managed for harvest.

Status Quo: The number of non-native species continues to increase. These populations have a substantial negative impact on native fish and wildlife. Efforts are underway to control undesirable non-native species, and to prevent the introduction of any new, potentially harmful non-native species. Populations of desirable non-native species are encouraged to increase.

PA 2002: Non-native species are actively managed to benefit the greatest number of targeted native fish and wildlife species, especially listed species. Management of non-native fish species could include methods such as changes in angling regulations, physical removal (e.g., nets, traps, and electrofishing), the use of pesticides (e.g., rotenone and antimycin), dewatering and stream flow augmentation, and habitat manipulation techniques. Non-native fish would be enhanced only under certain circumstances (for example, in areas that completely lack native fish and where native fish could not be reintroduced). Management of non-native wildlife species could include techniques such as relocation of problem individuals or populations, change in hunting regulations, physical removal/deterrence (e.g., shooting, trapping, water spray, and avian predator lines), biological/chemical controls (e.g., sterilization), and habitat manipulation. Increases in some desirable non-native wildlife species would continue due to species-specific management. Overall, there would be fewer non-native species resulting in potentially better conditions for native fish and wildlife compared to Status Quo.

Regional Guidance:

Council's 2000 Fish and Wildlife Program

"… Where impacts have irrevocably changed the ecosystem, the [Fish and Wildlife] program will protect and enhance the habitat and species assemblages compatible with the altered ecosystem." (p. 13)

"… Any proposal to produce or release non-native species must overcome this strong presumption in favor of native species and habitats and be designed to avoid adverse impacts on native species." (p. 21)

Governors' Recommendations

"Sport fishing regulation changes also should strive to minimize effects of exotic species on native species." (p. 11)

Tribal Vision

"Mitigate hydrosystem and other impacts by native resident fish restoration, if possible, and native/non-native fish substitution, where appropriate …." (p. 9)

3A.3.2 Economic Environment

The economic environment is addressed in terms of commerce, recreation, economic development, and funding costs. The commerce effect is divided into six subcategories: power; transmission; transportation; agriculture; ranching, and forestry; commercial fish harvest, and other industry. Recreation is broken into two subcategories: sport fishing and wildlife harvest; and other recreation. Economic Development also has two subcategories: industrial, residential and commercial development; and employment. Funding costs are examined in terms of ratepayers and other sources of funding.

COMMERCE

The Commerce Effect is evaluated by the following:

- Power
- Transmission
- Transportation

- Agriculture, Ranching and Forest Products
- Commercial Fish Harvest
- Other Industry

More often than not, the Regional Guidance documents make broad policy direction statements regarding commerce that can be applied to more than one of the subcategories. In an effort to eliminate repetitiveness within this Commerce section, the following Regional Guidance list conglomerates the most commonly used Regional Guidance directives with all of the subcategories. Where Regional Guidance statements are unique to each subcategory they are listed immediately below the respective PA 2002 description.

Common Regional Guidance Compilation for Commerce Effects:

Basinwide Salmon Recovery Strategy
"Minimize Adverse Effects on Humans. Implement salmon and steelhead conservation measures in ways that minimize their adverse socio-economic and other human effects." (p. 33) (Applies to: *Power; Transmission; Transportation; Agriculture, Ranching, and Forestry; Commercial Fish Harvest; and Other Industry*)

Draft Action Agency ESA 2002-2006 Implementation Plan
"Ensure salmon, steelhead, sturgeon, and bull trout conservation measures are balanced with human needs, including FCRPS project purposes." (p. 10) (Applies to: *Power; Transmission; Transportation; Agriculture, Ranching, and Forestry; Commercial Fish Harvest; and Other Industry*)

Governors' Recommendations
"… the goal we suggest is protection and restoration of salmonids and other aquatic species to sustainable and harvestable levels meeting the requirements of the Endangered Species Act, the Clean Water Act, the Northwest Power Act and tribal rights under treaties and executive orders while taking into account the need to preserve a sound economy in the Pacific Northwest." (p. 2) (Applies to: *Power; Transmission; Transportation; Agriculture, Ranching, and Forestry; Commercial Fish Harvest; and Other Industry*)

Tribal Vision
"Tribal people believe that there is no distinction between natural resources and cultural resources—all are necessary for culture, economy, religion and a way of life to be expressed, practiced and maintained." (p. 2) (Applies to: *Power; Transmission; Transportation; Agriculture, Ranching, and Forestry; Commercial Fish Harvest; and Other Industry*)

Table 3A-6: Commerce Effects Comparison of PA 2002

COMMERCE	Status Quo	PA 2002
POWER **less need for new resources = better**		

Existing Conditions: The impacts to power generation capability of the hydrosystem from changes to benefit fish are a major concern. The current regional firm power resources are made up of hydro, coal, nuclear, combustion turbines, and miscellaneous resources supplemented with imports and independent/small power producers. The FCRPS includes 31 major multiple-use facilities on the Columbia River and its tributaries. Since 1995, hydrosystem operational requirements on the FCRPS for salmon

recovery have reduced power generation in the Region by about 1000 MW. Most of the lost power has been replaced by power from higher-cost combustion turbines and power market purchases.

Status Quo: With continued population growth, the need for power will increase. Between 2002 and 2011, regional firm loads are projected to grow by nearly 2,400 MW. This electrical demand is likely to be met by higher-cost combustion turbines and some renewable energy resources.

PA 2002: The hydrosystem would be modified at existing facilities to benefit fish, especially weak stocks, while balancing the need for reliable generation for the Region. Hydro modifications could include both operational modifications (such as changes in flow, spill, and reservoir operations) and facility modifications to improve in-river juvenile salmon survival. Some actions could result in slight decreases in generation while others could result in more generation, such as an increase in fish transportation. For example, the 2000 BiOps are projected to change hydropower ranging from a possible small increase to a small decrease in power production.[42] Any lost power would most likely be replaced by combustion turbines, or by renewable resources as they become more cost-competitive. However, there is likely to be only a very small need, if any, for additional resources. Therefore the need for new resources is the same as Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy
See above: Regional Guidance Compilation for Commerce Effects

Draft Action Agency ESA 2002-2006 Implementation Plan
See above: Regional Guidance Compilation for Commerce Effects

Council's 2000 Fish and Wildlife Program
"Actions taken under this [Fish and Wildlife] program must be cost-effective and consistent with an adequate, efficient, economical and reliable electrical power supply." (p. 13)

Governors' Recommendations
"We acknowledge that the Columbia and Snake River hydropower system has been improved for fish passage. … we support further modifications to the configuration and operation of the hydrosystem where appropriate and necessary to benefit fish and so long as the modifications do not jeopardize the Region's reliable electricity supply." (p. 8)

Tribal Vision
See above: Regional Guidance Compilation for Commerce Effects

Corps 2002 LSR ROD
"The recommended plan (preferred alternative) was determined to minimize the net economic impacts in these areas [loss of hydropower]." (p. 17)

COMMERCE	Status Quo	PA 2002
TRANSMISSION **fewer impacts = better**		

[42] Corps 2002b; Section 6.4.2.7 Electric Power. USDOE/BPA 2000d.

Existing Conditions: The most important impacts to transmission (including maintenance of the transmission facilities) from fish and wildlife activities are related to reliability. BPA owns and operates more than 15,000 circuit-miles of high-voltage line (or about three-fourths of the bulk transmission in the Northwest). The current transmission system delivers low-cost power, connects 31 Federal hydro projects and numerous other generating facilities, and imports/exports power among several regions. Ancillary services are also very important. Vegetation removal, herbicide application, and other actions necessary to maintain the transmission system can be affected by habitat activities for fish and wildlife.

Status Quo: There will be some increase in the need for new transmission facilities in response to population growth, transmission congestion, and the increased need for power. Also, since the transmission system was originally built to complement the hydrosystem, changes to the hydrosystem will affect the transmission system and transmission reliability. Transmission construction and maintenance will continue to be impacted by habitat management/protection activities.

PA 2002: Transmission could be affected by modifications to existing hydro generation facilities to benefit fish and wildlife, especially listed species. However, any changes will be balanced with the need for reliable generation and transmission. It is likely that any hydro changes would be within the Region's ability to continue to benefit from the existing transmission facilities over the next 10-20 years. Efforts to protect and enhance listed fish and wildlife species habitat could affect the development and maintenance of transmission facilities or ancillary services. However, no additional transmission improvements would likely be necessary. Therefore there would be no more impacts to transmission than under Status Quo. (See also Power section.)

Regional Guidance:

See Power above and Regional Guidance Compilation for Commerce Effects.

COMMERCE	Status Quo	PA 2002
TRANSPORTATION **fewer impacts = better**		

Existing Conditions: The most important impacts to transportation from fish and wildlife activities are associated with impacts to the waterway. The 465-mile Columbia-Snake Inland Waterway is a major route for transporting goods, facilitating barge traffic from inland ports to the Pacific Ocean. The Corps maintains the channel, which consists of two segments: the deep-draft downriver portion and the shallow-draft upriver portion. The products shipped through the system include grain, wood products, petroleum products, and sand and gravel. Other major modes of transportation are rail and trucking.

Status Quo: The mode of transportation most likely adversely impacted by fish and wildlife activities is navigation, especially the shallow-draft portion of the Columbia-Snake Inland Waterway and lower Snake River system. Rail and road transportation will continue to increase in response to a growing economy.

PA 2002: Navigation could be affected by changes made to hydro facilities and operations for fish enhancements; however, any impacts are likely to be small. Navigation could be improved through practices such as channel deepening, as long as impacts to listed fish and wildlife are mitigated. Any reduction in navigation would result in a small increase in the use of rail and road transportation. There might be some small increases in other transportation costs if there are modifications to the hydro system for fish and wildlife. However, the modes of transportation for goods are not likely to change. Impacts to transportation from fish and wildlife activities will be the same as those under Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy
"Mitigate for significant social and economic impacts and explore creative alternatives for achieving these objectives." (p. 33)

Draft Action Agency ESA 2002-2006 Implementation Plan
See above: Regional Guidance Compilation for Commerce Effects

Governors' Recommendations
See above: Regional Guidance Compilation for Commerce Effects

Tribal Vision
See above: Regional Guidance Compilation for Commerce Effects

Corps 2002 LSR ROD
"The recommended plan (preferred alternative) was determined to minimize the net economic impacts in these areas [loss of navigation]." (p. 17)

COMMERCE	Status Quo	PA 2002
AGRICULTURE, RANCHING, AND FOREST PRODUCTS **fewer impacts = better**		

Existing Conditions: The most important impacts to agriculture, ranching, and forestry from fish and wildlife activities are reductions or changes in farm yield, range production, and timber harvest. These impacts are related to restrictions in land and water use, and increased regulation on Federal lands to protect listed species and ecosystem health. There are approximatley 7 to 9 million acres of irrigated agriculture in the Columbia River Basin. Some of this acreage is dependant on irrigation water from Federal facitilies. The Columbia River Basin also supports approximately 16 million acres of non-irrigated lands, 45 million acres of rangeland (of which approximately 25 million acres are on Federal property), and 65 million acres of forested lands (42 million acres on Federal property). Commodity prices for these industries are largely controlled by national and world market conditions.

Status Quo: Overall, there will be a gradual increase in impacts to farming, ranching, and timber harvest as activities taken to benefit fish and wildlife increase. In particular, actions to benefit listed species will restrict agriculture, grazing, and forestry.

PA 2002: Agriculture, ranching, and the forest products industry could be limited as more habitat was protected and enhanced to benefit listed fish and wildlife. Under this Policy Direction, these industries would focus on increasing production efficiency or adjusting operations, while maintaining compatibility with habitat management for fish and wildlife. Some land retirement could be used where practical. Overall, impacts to agriculture, ranching, and forest industries would be the same as those under Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy

"Agriculture and rangeland use typically is not subjected to the regulations and ordinances associated with other land uses. Yet, literature and many federal and state conservation programs clearly confirm that agricultural land use patterns need to be changed for aquatic habitats to be adequately protected and restored." (p. 42)

Draft Action Agency ESA 2002-2006 Implementation Plan

"Because human activity, development, and population growth will continue, conservation [Columbia Basin fish and aquatic species] depends on managing human impacts to achieve suitable ecosystem conditions." (p. 22)

Governors' Recommendations

"Stream and river reaches throughout the Columbia River Basin have flow and water quality problems that impede regional fish recovery efforts. The states are setting water quality standards and preparing implementation plans in accordance with previously established schedules. The states are also reviewing instream flow levels to address biological requirements for ESA-listed aquatic species. … we recommend federal assistance and support be made available to the states to better coordinate these timelines and, where necessary, to accelerate water quality improvements and to establish instream flows that benefit listed aquatic species in the Columbia Basin." (p. 4)

"We also recognize existing efforts to conserve water and support further assistance to promote conservation." (p. 4)

"…given the major responsibilities that will fall upon private landowners, voluntary habitat improvement programs need to be fully encouraged …" (p. 5)

Tribal Vision

"Protect, enhance, rehabilitate and restore instream flows and conditions and overall watershed health and productivity…" (p. 7)

Corps 2002 LSR ROD

"The recommended plan (preferred alternative) was determined to minimize the net economic impacts in these areas [loss of water supply]." (p. 17)

COMMERCE	Status Quo	PA 2002
COMMERCIAL FISH HARVEST **More harvest = better**		

Existing Conditions: Impacts to commercial fish harvest from fish and wildlife activities relate to the harvest levels set for specific stocks of anadromous fish. Columbia Basin salmon are harvested in the northwest U.S., Canada, and Alaska ocean fisheries, and in mainstem Columbia River and tributary freshwater fisheries. The salmon fishery is largely a mixed-stock fishery, with increases in harvest only when abundance is high. Hatcheries have been operated to support harvest. Changes in harvest regulations have been in the form of restrictions, shortened seasons, area closures, special gear regulations, license

moratoria, and buyouts of fishing fleets. There has been a trend to reduce harvest rates in mixed-stock areas in favor of harvests in terminal areas where the stocks can be segregated and more selectively caught. Management of the ocean fishery is difficult because of salmonid migratory patterns, multiple jurisdictions, laws, treaties, and the mixing of salmon populations from different river systems. The in-river commercial fishery is subject to Federal, state, and tribal jurisdictions, laws, treaties, and management strategies.

Status Quo: Recently, some harvest has increased, with increased abundance, likely as a result of improved ocean conditions. ESA obligations have resulted in increased emphasis on protecting listed native fish. Harvest may be reduced to comply with planned ESA and Pacific Salmon Treaty actions. The increased emphasis on protecting threatened and endangered native fish is reducing the economic benefits to some local communities and industries. The commercial salmon fishery has recently been subject to intense economic competition from the farmed salmon industry. Despite the recent improvement in harvest levels, economic trends and more costly harvest regulations are expected to result in continuing declines in the amount of commercial salmon fishing.

PA 2002: Harvest opportunities for both naturally-spawning and hatchery-produced native anadromous stocks would likely be increased by reforms in hatchery operation and a shift to selective fisheries. Habitat would be improved and managed to enhance production of fish and increase harvest. There could be an increase in the harvest of weak stocks as they recover. Overall, commercial harvest would increase relative to Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy

"Assure Tribal Fishing Rights and Provide Non-Tribal Opportunities. Restore salmon and steelhead populations over time to a level that provides a sustainable harvest sufficient to provide for the meaningful exercise of tribal fishing rights, and where possible, provide non-tribal fishing opportunities." (p. 33)

"Restore salmon and steelhead to population levels that will support treaty and non-treaty harvest." (p. 34)

Council's 2000 Fish and Wildlife Program

"Harvest can provide significant cultural and economic benefits to the region, and the program should seek to increase harvest opportunities consistent with sound biological management practices. Harvest rates should be based on population-specific adult escapement objectives designed to protect and recover naturally spawning populations." (p. 14)

Governors' Recommendations

"… We commit to support a recovery approach designed not only to achieve ESA delisting levels but also to rebuild the runs to levels that support treaty and non-treaty harvest. But we believe rebuilding requires that all harvest may have to be reduced in the short term, together with aggressive actions taken to address mortality in the other life stages." (p. 10)

"For commercial and non-treaty sport fisheries, we recommend that harvest rates, gear and timing in the mainstem fisheries be consistent with ensuring survival of the species and providing for their eventual recovery when combined with recovery actions in other sectors." (p. 10)

Tribal Vision

"The tribal vision for the future is one where people, fish, wildlife, plants and other natural and cultural resources are once again biologically healthy and self-sustaining…. It not only supports viable and genetically diverse fish and wildlife resources that provide direct benefits to society, through harvest and improved physical health of tribal and non-tribal members, but also nourishes the spirit." (p. 3)

COMMERCE	Status Quo	PA 2002
OTHER INDUSTRY **Fewer impacts = better**		

Existing Conditions: The regional economy has evolved from being primarily natural resource-based to a more diverse economy with growing trade and service sectors. Increasingly, mining, aluminum products, and other natural resource-based and/or water-dependant industries are facing increased regulation, operational costs, and foreign competition. The largest industry sectors (and their relative contributions to the regional employment) are services, trade, government, and manufacturing.

Status Quo: The regional economy will continue to grow. Information-based technologies and services will likely grow the fastest, followed by trade, government, and manufacturing. Facing increasing operational costs and competition, natural resource dependant industries will continue to decline.

PA 2002: There would be some decrease in industrial development in areas that affect weak stocks. This would likely be counter-balanced by other development, especially in the services, trade, and government sectors. Active remediation of impacts from natural resource-based industries would be required. Environmentally friendly industries and development would be encouraged. Overall, there would be fewer impacts to other industry compared to Status Quo.

Regional Guidance:

See Transportation above and Regional Guidance Compilation for Commerce Effects.

RECREATION

Table 3A-7: Recreation Effects Comparison of PA 2002

RECREATION	Status Quo	PA 2002
SPORT FISHING AND WILDLIFE HARVEST **more opportunities = better**		

Existing Conditions: Impacts to sport fishing and hunting (including trapping) are areas of concern related to fish and wildlife policies. Recreational opportunities for sport fishing and hunting are plentiful throughout the Region and hundreds of thousands of people participate annually. Sport fishing is supported by hatchery production to maintain harvest levels.

Status Quo: Sport fishing and hunting would continue at levels similar to existing conditions. Although some ESA listings may have reduced economic benefits (especially to local communities and tourism-related industries), sport fishing and hunting produce a sizable economic benefit in the Region. Hatcheries would continue to supplement the fisheries.

PA 2002: The management of fish and wildlife habitat to improve production could increase fishing and hunting opportunities. The restriction on harvest for listed species may limit some of the increased opportunities. However, the reformation of hatcheries to include both conservation hatcheries—to assist weak stocks—and compensation/supplementation hatcheries—to increase harvest—would lessen the impact of fishing restrictions. The economic benefits, especially from supporting services, could increase as fish and wildlife are managed for the purpose of increasing harvest opportunities. The creation of a sustainable resident fishery, particularly in blocked areas, would likely allow for more harvest opportunities for recreational anglers. Overall, the sport fishing and wildlife harvest opportunities and associated economic benefits would be better than under Status Quo.

Regional Guidance:

See Commercial Fishing above and Regional Guidance Compilation for Commerce Effects.

RECREATION	Status Quo	PA 2002
OTHER RECREATION **more opportunities = better**		

Existing Conditions: Impacts to other areas of recreation result from changes in fish and wildlife policy. Some recreational activities are water-based, such as rafting, kayaking, canoeing, water-skiing, boating, windsurfing, and swimming. Others, such as picnicking, camping, mountain biking, horseback riding, wildlife viewing, hiking, siteseeing, skiing, and ecotourism are land-based. Many of these recreational opportunities are located in rural areas removed from population centers. Population increases have created more demand for recreational resources.

Status Quo: Population growth will bring continued pressure for increased recreational resources and ecotourism opportunities. It will also result in a shift away from traditional consumptive uses. Developed recreation will be limited in areas with listed species.

PA 2002: Efforts to recover weak stocks may limit recreational opportunities. Other actions to rebuild fish and wildlife populations would be managed to accommodate recreational needs. Land-based recreation might benefit from land acquired and managed for habitat. There may be changes in the types of recreational activities available; however, overall the amount of recreation should be about the same as under Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy
"Mitigate for significant social and economic impacts and explore creative alternatives for achieving these objectives." (p. 33)

Corps 2002 LSR ROD
"The recommended plan (preferred alternative) was determined to minimize the net economic impacts in these areas [loss of recreational opportunities]." (p. 17)

See also Regional Guidance Compilation for Commerce Effects.

ECONOMIC DEVELOPMENT

Table 3A-8: Economic Development Effects Comparison of PA 2002

ECONOMIC DEVELOPMENT	Status Quo	PA 2002
INDUSTRIAL, RESIDENTIAL AND COMMERCIAL DEVELOPMENT **fewer impacts = better**		

Existing Conditions: Impacts to economic development from policies implemented for fish and wildlife activities are concerns for developers. Population growth has fueled development in all three sectors. Major urban areas have undergone significant growth in high-tech industries and corresponding economic development, while rural areas continue to rely on traditional industries experiencing little economic growth. There are concerns about how fish and wildlife activities affect local land use plans. Habitat conservation plans are becoming more common.

Status Quo: Regionwide, it is expected there will be continued growth in the industrial, residential, and commercial development sectors. However, this growth is expected to continue to be restricted based on environmental requirements. Development in rural areas, which often rely more on natural resource-based economies, is more impacted by restrictions to protect listed fish and wildlife species.

PA 2002: Industrial, residential, and commercial development is promoted where it is compatible with fish and wildlife and their habitats. Any development that adversely affects listed species would be restricted. The goals are to manage human activities, while protecting listed species, and rebuilding fish and wildlife populations to sustainable harvest levels. Overall, development is expected to be about the same as Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy
"Mitigate for significant social and economic impacts and explore creative alternatives for achieving these objectives." (p. 33)

Corps 2002 LSR ROD
"The recommended plan (preferred alternative) was determined to minimize the net economic impacts in these areas [loss of water supply]." (p. 17)

See also Regional Guidance Compilation for Commerce Effects.

ECONOMIC DEVELOPMENT	Status Quo	PA 2002
EMPLOYMENT **more employment = better**		

Existing Conditions: Impacts to employment from fish and wildlife mitigation and recovery activities are a region-wide concern, especially for industries that rely directly on natural resources. Generally, the economy of the Region is evolving away from its dependence on natural resources toward information-based technologies and services. Services, trade, and government activities account for most regional employment and are growing sectors of the economy. Resource-related employment industries

(agriculture, forestry, fisheries, mining, and electric and gas utilities) account for less than 10% of the Region's employment.

Status Quo: Despite periodic downturns, employment is projected to increase significantly over the next 20 years—especially in manufacturing and services. Some of these increases are due to fish and wildlife mitigation and recovery efforts. Employment in resource-based industries will likely continue to decline. However, especially in small communities, resource-based employment (especially agriculture) will remain important to the economic base.

PA 2002: Land management under a multiple-use approach would cause a slight increase in employment associated with agricultural and forest products industries. However, efforts to protect listed species and their habitats would continue to limit employment. Active habitat enhancement would create some added jobs in government, construction and related services. Employment opportunities could also increase because of increased hatchery production and harvest opportunities. However even with these slight gains, long-term employment would likely be about the same as Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy

"Mitigate for significant social and economic impacts and explore creative alternatives for achieving these objectives." (p. 33)

See also Regional Guidance Compilation for Commerce Effects.

FUNDING COSTS

Table 3A-9: Funding Cost Effects Comparison of PA 2002

FUNDING COSTS	Status Quo	PA 2002
RATEPAYERS **increased ability to fund = better**		

Existing Conditions: Increased costs for fish and wildlife, combined with foregone revenue, constitute the main concerns for ratepayers with regard to fish and wildlife funding. The trend for fish and wildlife expenditures from 1996–2000 has been toward increased expenditures, with no plan for guiding fish and wildlife mitigation and recovery costs. Although Program expenses were kept relatively stable, other fish and wildlife costs (related hydro operations) have steadily increased.

Status Quo: In 2001, BPA's fish and wildlife expenditures (including power replacement costs) were more than $1.7 billion. There appears to be no long-term plan for stabilizing funding expenditures. Absent such a plan, funding costs for fish and wildlife will likely continue to increase, resulting in higher rates.

PA 2002: The ratepayers would continue to pay a large part of the costs for the direct actions (e.g., habitat protection and enhancement, hatchery and hydro modifications) taken to recover listed species. In addition, ratepayers would continue to fund other fish and wildlife mitigation actions under BPA's Program to promote sustainable populations of harvestable fish and wildlife, such as increasing fish transport and managing habitat. Action measures would be implemented at least cost, using a long-term plan that would ensure predictability and stability in funding and accountability for results. However, funding costs would be limited by BPA's MSR. Overall, funding costs and ratepayer ability to fund would be about the same as Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy

"Select actions to restore and enhance fish and their habitat that achieve the biological and ecological objectives at the least cost." (p. 33)

"Seek adequate funding and implementation for strategies and actions." (p. 34)

"Coordinate restoration efforts to avoid inefficiency and unnecessary costs." (p. 34)

Council's 2000 Fish and Wildlife Program

"Actions taken under this [Fish and Wildlife] program must be cost-effective and consistent with an adequate, efficient, economical and reliable electrical power supply." (p. 13)

"The Council adopts … funding principles to prioritize among the many needs to address fish and wildlife impacts throughout the basin …." (p. 47)

"Where mitigation measures are designed to benefit both U.S. and Canadian fish and wildlife populations, U.S. ratepayer funding should be in proportion to anticipated benefits to the U.S. populations." (p. 21)

Governors' Recommendations

"We believe the principles and activities in this document will protect the Federal Columbia River Power System and also recover and rebuild Columbia River Basin fish and wildlife. There will be a significant cost, but we expect the power system to pay only its fair share." (p. 14)

"Planning and overhead expenses must be kept to a minimum, and project expenditures should focus on activities that benefit fish and wildlife." (p. 15)

"To better understand Bonneville's expenditures in a basinwide context, and to improve accountability to the ratepaying public, the Council should prepare an annual report to clearly document progress toward meeting fish and wildlife mitigation goals, and how ratepayer money is being spent. … The report could provide assurance that Bonneville's expenditures are directed toward on-the-ground projects rather than redundant or excessive planning processes and that funding for research is clearly focused and prioritized. …" (p. 15)

"All capital improvements [to hydro system] should benefit the fullest range of salmonid species and should offer demonstrated biological gains." (p. 8")

FUNDING COSTS	Status Quo	PA 2002
OTHER FUNDING SOURCES **increased ability to fund = better**		

Existing Conditions: The increasing cost of funding fish and wildlife mitigation and recovery is a major concern for other funding sources (e.g., Federal taxpayers, states, tribes, and private/commercial interests). Their contributions include monies from Federal appropriations, taxes, user fees, tags and licenses, and private/commercial donations. Many of the costs for fish and wildlife are spread across numerous categories of funding sources and programs, making it very difficult to accurately capture the true expenditures for either fish or wildlife mitigation and recovery.

Status Quo: The amount and share of costs paid by other funding sources are likely to increase. However, an accurate accounting of all fish and wildlife expenditures would remain difficult because of the fragmentation in funding and programs.

PA 2002: Other funding sources would pay some portion of the costs for the direct actions taken to recover listed species and benefit other fish and wildlife (e.g., habitat protection, enhancement and management, hatchery modifications, and hydro modifications). Further costs may be incurred if BPA's funding is limited by its MSR. The ability of other funding sources may be limited by economic conditions. However, other funding sources could generate more revenue from the sale of licenses, tags and user fees as fish and wildlife are enhanced and managed for harvest. The costs to other funding sources, and their ability to fund, would be about the same or slightly better than Status Quo.

Regional Guidance:

Council's 2000 Fish and Wildlife Program

"… There also must be coordination among actions taken at the subbasin, province, and basin levels, including actions not funded under this program. Accordingly, creating an appropriate structure for planning and coordination is a vital part of this program." (p. 14)

Governors' Recommendations

"Because much of the habitat is on non-federal lands, state, tribal and local governments, as well as private landowners, must be full partners in the recovery effort." (p. 4)

"Congress should … increase the amount of federal appropriations, in recognition of the fact that fish and wildlife of the Columbia River Basin are national resources and their protection satisfies obligations in federal law, including treaties with Indian tribes and Canada, the Endangered Species Act, the Clean Water Act and the Northwest Power Act." (p. 14)

"We strongly endorse the concept of local planning for recovery of salmonids and other aquatic species. This concept has the advantage of bringing together local and tribal governments with local citizens to develop and implement local recovery plans. A local focus also helps avoid duplication of efforts and "top-down" planning." (p. 5)

Corps 2002 LSR ROD

The Corps will rely on the annual and 5-year plans as the mechanism to implement the action items in the recommended plan (preferred alternative) described in the FR/EIS. The majority of the structural and operational items included in the recommended plan (preferred alternative) are addressed in the RPAs of the NMFS and USFWS 2000 Biological Opinions. Implementation of actions is dependent upon receiving adequate funding, completing appropriate engineering designs and prototype tests, obtaining favorable test conditions (weather and available fish), and engaging the Region on the priority of each action. (p. 6)

See also Ratepayers above.

3A.3.3 Social Environment

The social environment is addressed in terms of tribal interests, cultural/historic resources, and aesthetics. The tribal interests effect area is further divided into four subcategories: fish harvest, health, spirituality, and tradition.

TRIBAL INTERESTS

Table 3A-10: Tribal Interests Effects Comparison of PA 2002

TRIBAL INTERESTS	Status Quo	PA 2002
FISH HARVEST **more tribal harvest = better**		

Existing Conditions: A major issue for tribes, concerning fish and wildlife management, is the availability of sufficient numbers of fish to ensure continued harvest. Both anadromous and resident fish have great cultural significance to Native American Indian peoples. Salmon are a major food source and trading commodity for most Columbia Basin tribes. Tribal harvest, especially for anadromous fish, has been substantially reduced from historic levels. Most of the upriver anadromous fishing opportunities no longer exist. The ability of the Federal government to meet trust responsibilities (as it pertains to fish harvest) has been limited because of declining fish populations.

Status Quo: Harvest has continued to be below tribal expectations. Despite improvements, some salmon populations continue to decline and tribal harvest opportunities are expected to be restricted for many years. Recently, some upriver opportunities for fish harvest have been developed. Bright fall chinook being reared in hatchery facilities for release in the Hanford Reach of the mid-Columbia River may enhance the upriver tribal fishery. However, expectations are that the declining trends in some of the salmon populations will continue, limiting harvest.

PA 2002: The protection and enhancement of listed species habitat, reformation of hatcheries, and changes in hydro operations/facilities would likely increase the levels of resident and anadromous fish. Tribal fish harvest would improve as the naturally-spawning and hatchery-produced fish populations increased. The tribes would likely adopt more selective harvest methods to avoid weak stocks. The creation of a sustainable resident fishery would increase upriver fish harvest. This Policy Direction would result in more harvest opportunities in more locations than Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy

"Assure Tribal Fishing Rights and Provide Non-Tribal Opportunities. Restore salmon and steelhead populations over time to a level that provides a sustainable harvest sufficient to provide for the meaningful exercise of tribal fishing rights, and where possible, provide non-tribal fishing opportunities." (p. 33)

"Select actions that consider or take into account tribal socio-economic or cultural concerns." (p. 34)

"Restore salmon and steelhead to population levels that will support treaty and non-treaty harvest." (p. 34)

Council's 2000 Fish and Wildlife Program

"Harvest can provide significant cultural and economic benefits to the region, and the program should seek to increase harvest opportunities consistent with sound biological management practices." (p. 14)

"[Basinwide Provisions] The vision for this program is a Columbia River ecosystem that…provides abundant opportunities for tribal trust and treaty right harvest and for non-tribal harvest and the conditions that allow for the recovery of the fish and wildlife affected by the operation of the hydrosystem and listed under the Endangered Species Act." (p. 13)

Governors' Recommendations

"... We commit to support a recovery approach designed not only to achieve ESA delisting levels but also to rebuild the runs to levels that support treaty and non-treaty harvest. But we believe rebuilding requires that all harvest may have to be reduced in the short term, together with aggressive actions taken to address mortality in the other life stages." (p. 10)

"We support continuing current levels of tribal ceremonial and subsistence harvest." (p. 10)

"… the goal we suggest is protection and restoration of salmonids and other aquatic species to sustainable and harvestable levels meeting the requirements of the Endangered Species Act, the Clean Water Act, the Northwest Power Act and tribal rights under treaties and executive orders while taking into account the need to preserve a sound economy in the Pacific Northwest." (p. 2)

Tribal Vision

"Resource populations and ecosystem conditions that provide for human sustenance, increased health and that support the traditional economic, cultural and spiritual needs and practices of the tribes, including harvest in throughout the international basin." (p. 4)

TRIBAL INTERESTS	Status Quo	PA 2002
HEALTH **more = better**		
SPIRITUALITY **more = better**		
TRADITION **more = better**		

Existing Conditions: A major concern for tribal members is the effect of fish and wildlife management activities on their health, spirituality, and tradition. Native American Indians believe that there is a close physical and spiritual interrelationship between humans and nature. Their health, spirituality, and tradition have been impaired by the loss of subsistence and ceremonial harvest of fish, wildlife, and plants, and access to traditional lands.

Status Quo: The Native American Indian community is concerned with the continued degradation of the air, land, and water, and the effects of this degradation on sacred places. There is increasing concern about heavy metal bioaccumulation in salmon and its disproportionate effect on tribal health. Efforts have recently been made to assess the impacts of Federal agency activities on tribes and to ensure that tribal interests and rights are adequately considered before Federal actions are taken. Maintaining tribal health, spirituality, and tradition is likely to become more difficult with the increasing pressure on natural resources in the Region from population growth and urbanization.

PA 2002: Habitat protection and enhancement activities for weak stocks/populations would increase listed species, as well as other plant and animal species that are important to tribal health, spirituality and tradition. Enhanced habitat, improved hydro operations and increased hatchery production would increase harvest opportunities, improving tribal health and tradition. The creation of a sustainable resident fishery would likely increase upriver fish harvest resulting in benefits to tribal health and tradition. These increases in plants, fish, and wildlife and the enhancement of habitat would also help increase spiritual values. Tribal health could also improve as fish and wildlife management actions and harvest result in more tribal employment. Overall, tribal health, spirituality, and tradition would likely be better than under Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy

"Consider Resources of Cultural Importance to Tribes. In implementing recovery measures, seek to preserve resources important to maintaining the traditional culture of the basin tribes." (p. 33)

"Select actions that consider or take into account tribal socio-economic or cultural concerns." (p. 34)

Governors' Recommendations

"We support continuing current levels of tribal ceremonial and subsistence harvest." (p. 10)

Tribal Vision

"Tribal people believe that there is no distinction between natural resources and cultural resources—all are necessary for culture, economy, religion and a way of life to be expressed, practiced and maintained." (p. 2)

"Resource populations and ecosystem conditions that provide for human sustenance, increased health and that support the traditional economic, cultural and spiritual needs and practices of the tribes, including harvest in throughout the international basin." (p. 4)

"The tribal vision for the future is one where people, fish, wildlife, plants and other natural and cultural resources are once again biologically healthy and self-sustaining…. It not only supports viable and genetically diverse fish and wildlife resources that provide direct benefits to society, through harvest and improved physical health of tribal and non-tribal members, but also nourishes the spirit." (p. 3)

CULTURAL/HISTORIC RESOURCES

Table 3A-11: Cultural/Historic Resources Effects Comparison of PA 2002

CULTURAL/HISTORIC RESOURCES	Status Quo	PA 2002
CULTURAL/HISTORIC RESOURCES **fewer impacts = better**		

Existing Conditions: Impacts to cultural and historic resources are a concern related to actions taken for fish and wildlife. There are many cultural and historic resources within the Pacific Northwest, and the losses of cultural and historical resources have been extensive. Many sites have been inundated by reservoirs or covered by sediment as a result of the construction of the FCRPS. Many other sites have been disturbed or destroyed by development. The major impacts on cultural and historical resources are from high water flows, wave action, and human activities (including vandalism).

Status Quo: Local, state, and Federal regulations provide some protection for cultural and historic resources. Even with legal protections and mitigation actions in place, some loss of historical and cultural resources is likely to occur. These losses would result from such actions as residential, commercial, and industrial development; hydrosystem operations; and recreational activities.

PA 2002: Sites would be protected where new residential, commercial, and industrial development was restricted for listed species. Historic and cultural resources may be affected by system operation strategies for fish and wildlife. For example, certain river operations to improve fish populations may involve the modification of structures such as spillways, dam embankments, and fish passage facilities, potentially causing direct effects on historic or cultural properties. Overall, the effects from this policy direction would be similar to those under Status Quo.

Regional Guidance:

Basinwide Salmon Recovery Strategy

"Protect Historic Properties. Consistent with the requirements of the national Historic Preservation Act and other applicable law, assure that effects of recovery measures on historic properties are identified and addressed in consultation with all interested and affected parties." (p. 33)

"Consider Resources of Cultural Importance to Tribes. In implementing recovery measures, seek to preserve resources important to maintaining the traditional culture of the basin tribes." (p. 33)

Tribal Vision

"Tribal people believe that there is no distinction between natural resources and cultural resources—all are necessary for culture, economy, religion and a way of life to be expressed, practiced and maintained." (p. 2)

AESTHETICS

Table 3A-12: Aesthetic Effects Comparison of PA 2002

AESTHETICS	Status Quo	PA 2002
AESTHETICS **fewer impacts = better**		

Existing Conditions: Impacts to aesthetics is a major concern related to fish and wildlife activities. Landscape aesthetics, or scenery, is important to residents in the Region. Aesthetics is also important to the ever-increasing number of visitors and the economies that depend on them. The demand for good visibility is high, but there are increasing concerns about regional haze.

Status Quo: Increased development and power generation to meet a growing population would cause a continued decrease in the aesthetics of the Northwest. For example, more land would likely be developed, reducing the quality of natural landscapes. This is likely to have impacts on both residents and visitors to the regions, and the economies that depend on them. Overall, a future decrease in aesthetics is expected.

PA 2002: Habitat protection and enhancement for listed fish and wildlife and habitat enhancement for non-listed fish and wildlife would improve aesthetics throughout the Region. Changes in hydrosystem operations that would cause the need for replacement power are unlikely. Therefore impacts, such as visibility, to aesthetics from resource development would be similar to Status Quo. Shoreline areas could be affected by changes in reservoir operations intended to benefit fish and wildlife, potentially impacting aesthetics. However in other areas, aesthetics could be improved through the acquisition of water rights for instream purposes. There would be increased opportunities to enjoy the additional aesthetic values created by the habitat improvement activities. Overall, aesthetics would be better than under Status Quo.

Regional Guidance:

Draft Action Agency ESA 2002-2006 Implementation Plan
"Avoid adverse modification of critical habitat for ESA-listed fish, including salmon, steelhead, bull trout, and sturgeon." (p. 9)

Council's 2000 Fish and Wildlife Program
"Wherever feasible, this program will be accomplished by protecting and restoring the natural ecological functions, habitats, and biological diversity of the Columbia River Basin." (p. 13)

Tribal Vision
"The tribal vision for the future of the Columbia River Basin has specific, measurable short-term and long-term goals and objectives. It is a vision achieved by clearly defined strategies and actions. Together, their collective aim is to maintain, protect and enhance currently healthy, natural ecosystems and habitat, and all their human and non-human resources." (p. 3)

3A.4 Comparison of PA 2002 against the BPA Purposes

The purposes, which were described in Chapter 1, will help to measure how well the PA 2002 would meet BPA's need. Table 3A-12 evaluates the PA 2002 against those purposes. This evaluation often turns on differences in opinions and perceptions. Public opinion in the Region regarding fish and wildlife mitigation and recovery efforts will be a prime factor in determining the degree to which BPA will be able to meet all its purposes.

Table 3A-13: Comparison of PA 2002 against the BPA Purposes

Facilitate implementation of a regional unified planning approach for fish and wildlife mitigation and recovery efforts that will improve: coordination, efficiency, and consistency	
PA 2002	This approach represents a distinct push to recover *all* ESA-listed fish and wildlife. This Direction may be seen by some as an inefficient use of financial resources for the overall benefit of fish and wildlife. Because it focuses heavily on legally protected fish and wildlife at a great cost, it may be perceived by some in the Region as not providing a broad benefit for all fish and wildlife or the regional economy, and thus likely would not result in a truly regional unified planning approach. This Policy Direction represents an all-inclusive approach to fish and wildlife mitigation and recovery. By focusing efforts at all stages of the life cycle of ESA-listed and non-listed species, it might be perceived by some as more effective in rebuilding populations, although, others may be confused by its lack of specific focus on listed species. Because it recognizes both the obligation to ensure natural resources are self-sustaining and the right for humans to use those same resources to meet sustenance, spiritual, and economic needs, this direction may be acceptable to much of the Region's population. This Policy Direction approach represents an all-inclusive focus for the BPA fish and wildlife mitigation and recovery efforts. It consolidates the regional guidance from other

	Federal agencies, State governors, Council, and tribes to assist BPA in achieving a more comprehensive policy for its fish and wildlife program. This approach will help BPA more efficiently direct its funding for mitigation and recovery efforts in a coordinated and consistent manner. Since it focuses on all stages of the life cycle of ESA-listed and non-listed species, and attempts to balance natural resource and social values, it is likely to be more regionally accepted. Because this approach uses guidance from throughout the Region and tries to better balance the fish and wildlife needs with the social and economic needs of the human population, it is expected that it will have a much greater chance of facilitating a unified planning approach.

Fulfill statutory, legal obligations under Regional Act; especially, to evaluate how Policy Directions may affect BPA's obligations to: protect, mitigate, and enhance fish and wildlife, and provide a reliable, adequate, efficient, and economical power supply.	
PA 2002	Under a weak stock approach, BPA would have difficulty meeting the agency's power supply requirements because additional hydro operations for fish would reduce power production. BPA's responsibilities for fish and wildlife mitigation due to the effects of the FCRPS would likely be less because four dams would be removed**.** Overall, BPA would likely have difficulty fully meeting its power-related obligations under this alternative Policy Direction. The approach would be the most likely to enhance BPA's ability to remain competitive in the electric utility market and provide low-cost electric power since the hydrosystem and inexpensive hydro power would remain relatively intact. BPA would retain its role as the major contributor to fish and wildlife mitigation because this approach would allow BPA to generate revenues and contain costs. This approach allows BPA use biological performance standards to assist in evaluating how it is meeting the obligations under the Regional Act, as well as other legal and business requirements. Because BPA can remain competitive in the electric markets through the continued marketing of low-cost hydropower, it will be better able to provide a reliable, adequate, efficient, and relatively economical power supply. Hydrosystem operations will continue to place flood control and fish concerns over power for planning purposes, as provided in the SOR EIS and 2000 BiOps, thus providing fish and wildlife equitable treatment with the other system purposes. In addition, BPA has a better chance of maintaining its role as a major contributor to the Region's fish and wildlife recovery effort costs and meeting the costs associated with protecting, mitigating, and enhancing fish and wildlife pursuant to the Regional Act.

Fulfill the Administration's Fish Funding Principles such that BPA: meets all of its fish and wildlife obligations, including trust and treaty obligations; takes into account the full range of potential fish and wildlife costs; demonstrates a high probability of Treasury repayment; minimizes rate effects on power and transmission customers, adopts rates and contracts that are easy to implement; and adopts a flexible fish and wildlife strategy.	
PA 2002	The increased costs of replacing lost hydropower, constructing new transmission, and protecting and enhancing habitat would cause BPA's rates to rise substantially. As BPA's approaches MSR (see discussion under 2.3.2.3), the probability of making the Treasury repayment decrease and BPA's ability to fulfill the other Principles will be difficult. Under this Policy Direction, modifications to the hydrosystem to benefit fish and wildlife would not likely result in substantial loss of generation and subsequent revenues, thus the need to raise rates or jeopardize the Treasury repayments would be minimized. These modifications, along with habitat enhancements and hatchery production will help BPA meet its other fish and wildlife obligations. Any modifications to the hydrosystem under this approach to benefit fish and wildlife would not likely result in substantial loss of generation and associated revenues. This

	could increase the chance of a comprehensive and consistent unified planning approach for fish and wildlife mitigation and recovery, provide BPA's customers more certainty for fish and wildlife costs and power rates, and enhance BPA's ability to make a timely Treasury repayment. A flexible fish and wildlife strategy, including the protection and enhancement of habitat, especially for ESA-listed species, would help BPA meet its other fish and wildlife obligations. Overall, BPA would likely be able to fulfill the Principles—meeting its fish and wildlife obligations and rate requirements.

Fulfill BPA's other obligations under other applicable laws, including Federal treaty and trust obligations with regional tribes, the Endangered Species Act, the Clean Water Act, and the National Historic Preservation Act.	
PA 2002	This approach focuses heavily on ESA-listed fish and wildlife, and thus would likely allow BPA to fulfill its ESA obligations. However, there may be impacts to cultural resources, as well as water quality, from dam removal. BPA would still likely be able to meet its treaty and trust responsibilities by retaining the tribes harvest levels. This focus, by design, is to be more balanced for the major aspects of fish and wildlife mitigation and recovery. It also gives more of an equal weight to all laws and regulations. Because of this focus, it is likely to meet less resistance in meeting these legal obligations. This approach tries to give more balance to the numerous competing laws, regulations, and related obligations. This Policy Direction approach was based on regional guidance from the other Federal agencies, the State Governors, the Council, the tribes, and the public to facilitate ensuring full consideration during its design. Because this approach gives intense consideration of all relevant laws, regulations, and obligations, and benefits more fish and wildlife in the Region, it is likely that overall there will be less resistance in meeting these legal obligations.

Promote predictable and stable fish and wildlife costs, enhancing BPA's ability to provide funding and remain competitive in the marketplace.	
PA 2002	Under this Policy Direction, it would be likely that more fish and wildlife funding would be sought from BPA to recover all listed species. However, the cost associated with replacing the lost hydropower with more costly power from other sources would likely cause BPA's rates to increase, making BPA less competitive. This could result in less revenue being available to fund fish and wildlife activities and other public benefits. Thus, BPA likely would not be able to fully meet this purpose under this approach. Funding levels would be established to achieve sustainable populations for harvest. This would likely result in more predictable and stable costs. This approach could be more costly as it provides benefits for both listed and non-listed species, which could affect BPA's competitiveness in the market and ability to provide funding for other public benefits. However, because BPA would retain all of its hydropower resources under this approach, these effects would not be expected to significantly affect BPA's ability to achieve this purpose under this approach. Under this approach, funding is provided for a broader number of listed and non-listed fish and wildlife species. However, the fish and wildlife costs are expected to be more predictable and stable over the long-term because of the focus on extensive management practices with biological performance standards to assist in evaluating how BPA and others are meeting their obligations on an ongoing basis. Overall, this approach is expected to allow BPA to provide funding for fish and wildlife and remain competitive.