

## CHAPTER 2: ALTERNATIVES INCLUDING THE PROPOSED ACTION

Chapter 2 describes and compares five action alternatives to accomplish the proposed action, as well as the No Action alternative. The action alternatives identify different approaches to standardize the planning and implementation of individual watershed management projects funded by BPA. All action alternatives are based on the same planning process. Each one contains prescriptions (goals, strategies, and procedural requirements) that would be applied to BPA-funded watershed management projects under a standardized program.

As described in Chapter 1, BPA needs to mitigate for fish and wildlife habitat that was lost during development of the Federal Columbia River Power System. BPA accomplishes this mitigation by funding projects recommended by the Council.

Many of the projects recommended by the Council are submitted as proposals from various sources (“project proponents”), including Indian tribes, state agencies, property owners, private conservation groups, or other Federal agencies. Project proponents develop proposals and submit them to the Council for consideration. Following independent review, the Council then selects projects to recommend for BPA funding.

At present, BPA addresses each project and its accompanying NEPA analysis on a case-by-case basis. BPA works closely with project proponents to develop a Project Management Plan. BPA then funds the project, and the project proponents (now called “project managers”) implement the project according to the Project Management Plan and/or an accompanying Memorandum of Agreement.

BPA's proposed action is to establish a comprehensive program that addresses the common issues and environmental impacts associated with watershed management projects. With such a program in place, BPA implementation of individual watershed management projects would change in two fundamental ways.

- First, BPA's site-specific involvement would be greatly reduced, as project proponents take the lead in preparing Project Management Plans according to the program requirements.
- Second, because this EIS explores, identifies, and discloses many of the environmental impacts expected from watershed management projects, environmental review of individual projects would have a narrower, more project-specific focus, so long as project managers follow the program requirements. Additional broad environmental analysis would be required only if anticipated impacts or project components were to differ substantially from those evaluated in this EIS.

## **2.1 THE ALTERNATIVES**

Six alternatives are evaluated in this EIS: five Action Alternatives and the No Action alternative. While each of the five action alternatives identifies a different approach to standardizing the planning and implementation of individual watershed management projects funded by BPA, they are all based on a single planning process (see Section 2.1.1).

Sections 2.1.2 through 2.1.7 describe each of the alternatives, including No Action. The alternatives present a range of possible strategies, goals, and procedural requirements (together called “management prescriptions”) to be applied to BPA-funded projects. Following the descriptions of these alternatives, Section 2.1.8 refers to the actual site-specific techniques that might be used under any of the alternatives to support watershed management activities. (Appendix A contains detailed information on these techniques.)

### **2.1.1 The Process for Project Implementation Common to All Alternatives**

Each action alternative is developed from a watershed-based project planning process<sup>1</sup>, and is quite similar to a 6-step planning approach developed for the Grande Ronde Watershed as part of the Model Watershed Program (Mobrand et al. 1995). The process seeks to solve problems in terms of **watersheds** (areas drained by a specific stream) rather than in terms of ownerships and jurisdictional land parcels. The goal of this process is to encourage actions that support both a sustainable environment and a sustainable economy. Watershed-based management would provide coordinated management of soil and aquatic resources over the entire area, on a ridge-top-to-ridge-top basis.

BPA would require that BPA-funded projects follow the eight basic steps of the standard planning process. For each project, managers would develop a Project Management Plan that addresses each step, commensurate with project scale and complexity. This process is interactive and flexible. Steps may occur “out of sequence” or simultaneously, and there may be many feedback loops between steps. For example, the results of one step may require that managers re-evaluate earlier steps. Project Management Plans may also become more detailed over time, as projects develop increasing definition and more is known about project boundaries, stakeholder interests, biological resources, and other project-specific issues.

The steps are as follows:

- 1. Define the Area of Concern/Interest.** In this step, project managers delineate the project and affected watershed boundaries and project issues.
- 2. Involve Stakeholders.** In the second step, managers gather input from affected agencies, landowners, tribes, individuals, and organizations. This step is similar to the project scoping and

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<sup>1</sup> This process is adapted from *The Ecosystem Approach: Healthy Ecosystems and Sustainable Economies*, a report of the Interagency Ecosystem Management Task Force, June 1995.

public involvement that occurs in a NEPA analysis. Interested parties may include individuals; interest groups; tribes; local governments; and county, state, regional, or Federal agencies.

3. **Develop a Statement of the Desired Future Condition.** Under BPA's standard planning process, project managers develop a statement that expresses a clear conceptual picture of the ideal long-term state towards which efforts are directed.
4. **Characterize the Historical and Present Site Conditions and Trends.** Project managers identify current and past conditions of the project area in terms of composition, structure, function, stresses, and other variables.
5. **Establish Project Goals.** In step 5, project managers identify the specific targets (in terms of conditions, outputs, features, or functions) against which progress and success will be measured.
6. **Develop and Implement an Action Plan for Achieving the Goals.** Project managers create a Project Management Plan that details the actions to be taken to achieve project goals, including the specific techniques, standards, and guidelines to be implemented and protocols for coordination with others.
7. **Monitor Conditions and Evaluate Results.** Once a Project Management Plan is being implemented, project managers start a program to (1) monitor implementation of relevant standards and guidelines; (2) verify achievement of desired results; and (3) determine soundness of underlying assumptions.
8. **Adapt Management According to New Information.** In this step, project managers respond to new information and technology by adjusting management actions, directions, and goals; management planning, action, monitoring, and feedback are established as a continuous cycle.

### **2.1.2 Alternative 1: No Action**

Alternative 1, No Action, continues the current case-by-case approach to project implementation. The eight-step process would not be formally adopted to implement watershed management projects. Environmental review and decisionmaking would be conducted at the individual project level through separate CXs, EAs, or EISs. BPA would continue to maintain a high level of involvement in making site-specific decisions.

### **2.1.3 Alternative 2: Base Response**

This alternative proposes to standardize the planning and implementation of individual watershed management projects funded by BPA, but only with respect to those prescriptions (i.e., goals, strategies, and processes) required by regulation or law. Many Best Management Practices (BMPs), for instance, are not required by law. This alternative would thus offer fewer solutions than the others. These required prescriptions are described below, under the appropriate process step. **Note that Alternatives 3 through 6 include all prescriptions listed under Alternative 2 as part of their actions.**

**1. Define the Area of Concern/Interest**

Under all action alternatives, project managers would:

- Identify watershed(s) potentially affected by the proposed project.
- Coordinate with water resource agencies to verify viability of new water sources and uses and to design and implement features necessary to protect aquatic systems and other water users.
- Contact the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Services (NMFS) to determine whether threatened or endangered species are known to occur or potentially occur in the vicinity of the project area.
- Identify any minority and/or low-income populations that may be adversely affected by the management project being considered (Environmental Justice).
- For projects involving ground-disturbing activities, make preliminary identification of the presence of historic and archeological resources.
- For project involving soil disturbance or channel relocation, make preliminary identification of the presence of hazardous and toxic wastes.

**2. Involve Stakeholders**

Under all action alternatives, project managers would:

- Consult with affected local governments, adjacent landowners, tribes, and Federal and state agencies regarding fish, wildlife, habitat, or other issues.

**3. Develop a Statement of the Desired Future Condition**

Under all action alternatives, project managers would:

- Identify a desired future condition that responds specifically to achievement of aquatic habitat objectives.

**4. Characterize the Site Conditions and Trends**

Under all action alternatives, project managers would:

- Consult with the State Historic Preservation Office (SHPO) and affected tribes to identify potential occurrences of cultural resources.
- Survey for threatened or endangered plant or animal species before disturbing land or conducting other activities that may affect such species if the USFWS and/or NMFS identify these species as potentially occurring in the vicinity of the project area.

**5. Establish Project Goals**

No standard prescriptions required.

**6. Develop and Implement an Action Plan for Achieving the Goals**

Under all action alternatives, project managers would:

- Take no action inconsistent with tribal legal rights, or with other legally mandated protections such as the Endangered Species Act (ESA).<sup>2</sup>
- Ensure that the project does not result in disproportionately high and adverse human health or environmental effects on minority or low-income populations, in accordance with Executive Order 12898 (Environmental Justice).
- Follow State and Federal regulations for all activities in or near streams and wetlands, whether for maintenance or improvement, including (1) the Clean Water Act, Section 401, Section 404; (2) Protection of Wetlands, Executive Order 11990; (3) Floodplain Management, Executive Order 11988; and (4) Rivers and Harbors Act of 1879 (Section 10).
- Avoid activities that might adversely affect threatened and endangered species or their habitat. Document compliance with Section 7 of the ESA.
- Use only Environmental Protection Agency (EPA)-approved pesticides and herbicides, and use only in the manner specified by EPA. For projects involving use of herbicides/pesticides, prevent use of herbicides/pesticides in or near surface water, unless the herbicide has been EPA-approved for such use.
- Screen streambank and habitat structures from sensitive viewing locations or develop designs that comply with Wild, Scenic, or Recreational River management guidelines, as appropriate.
- For projects involving prescribed burns, obtain required permits and use state-defined smoke management guidelines to determine allowable smoke quantities.
- If consultation with the SHPO and tribes indicates a potential for cultural resources, conduct cultural resource surveys to document any resources that are present.
- Incorporate a cultural resource management plan or other SHPO-approved actions where deemed necessary.
- Ensure that barriers are not created that unduly restrict access for physically disabled persons where public access is allowed.
- Specify that any new public-use facilities be free of barriers to persons with physical disabilities.

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<sup>2</sup> See the Consultation, Review, and Permits discussion in Chapter 5.

- Ensure that the project does not shift problems to another watershed or portion of a watershed.
- Consider the results of similar, previous projects, and consult the literature and other people doing similar types of projects to incorporate adaptive management strategies as the plan develops.

**7. Monitor Conditions and Evaluate Results**

No standard prescriptions required.

**8. Adapt Management According to New Information.**

No standard prescriptions required.

**Note: Each of the prescriptions under Alternative 2 applies to each of the other four action alternatives described below.**

**2.1.4 Alternative 3: Aquatic Habitat Objectives Emphasis**

Under this alternative, in addition to those prescriptions under Alternative 2, BPA would standardize the planning and implementation process by supporting primarily those management projects with an aggressive aquatic habitat restoration approach. Funding priority would be given to improvement of in-stream habitats and of immediately adjacent riparian areas that contribute to the poor quality of those habitats. Projects in upland and urban areas might be approved where relationships between identified non-point-source pollution and fish and fish habitat are clear. Projects funded under this alternative might generally provide immediate and long-term habitat improvement through projects of larger scope, implemented both in areas of greatest need and in areas known as aquatic refugia (strongholds of high habitat quality).

Project managers would retain a great deal of flexibility to adapt application of specific techniques and other actions to best meet the aquatic habitat objectives of the project. (Specific management techniques are listed in Appendix A.) Comprehensive watershed management objectives, such as protection or improvement of natural ecosystems and general species diversity, would be advanced through implementation of this Aquatic Habitat Objectives Emphasis alternative. However, benefits to non-aquatic resources, such as wildlife, would be purely coincidental to the accomplishment of aquatic objectives.

**1. Define the Area of Concern/Interest (Alternative 3)**

In addition to the prescriptions required under Alternative 2, project managers would undertake the following:

- Identify priority watersheds as those with the greatest potential to benefit from techniques to meet aquatic habitat objectives of watershed management.

**2. Involve Stakeholders (Alternative 3)**

Under Alternative 3, no requirements for stakeholder involvement are proposed, other than those prescribed under Alternative 2.

**3. Develop a Statement of the Desired Future Condition (Alternative 3)**

Under Alternative 3, in addition to prescriptions required under Alternative 2, BPA would support desired future conditions that focus exclusively on aquatic habitat objectives of watershed management. Social, economic, and other resource conditions would be considered only as they relate to supporting aquatic habitat objectives.

**4. Characterize the Site Conditions and Trends (Alternative 3)**

With the focus on achieving aquatic habitat objectives, BPA would support characterization of environmental elements that project managers need to understand in order to achieve those objectives effectively.

In addition to the required prescriptions, project managers would undertake the following:

- Identify and map soil conditions, topography, hydrology, vegetation, and other physical and biological systems within areas proposed for watershed management projects.
- Establish baseline information for habitat and species against which change can be measured (related to the "measurable aquatic habitat objective" standard included in step 5).

**5. Establish Project Goals (Alternative 3)**

Project managers would undertake the following:

- Establish measurable aquatic habitat objectives (e.g., number of habitat units, length of stream, acres of habitat types, list of indicator species, water quality standards).
- Include, as a project goal:
  - \* protection of soil and aquatic resources;
  - \* protection of high-quality native or other habitat or species of special concern (whether at the project site or not), including endangered, threatened, or sensitive species;
  - \* development of riparian or other habitat that can benefit fish and wildlife;
  - \* mitigation of water quality and aquatic habitat losses in-place, in-kind, wherever possible;
  - \* protection or improvement of natural ecosystems and species diversity over the long term; and

- \* development of habitat that complements the activities of the region's tribes, state and Federal fish and wildlife agencies, and private landowners.

## **6. Develop and Implement an Action Plan for Achieving the Goals (Alternative 3)**

Under Alternative 3, BPA would support a wide range of mitigation techniques but would favor those plans that place a strong emphasis on in-stream habitat and riparian restoration. These projects would generally realize immediate and long-term habitat improvements, and would likely achieve the aquatic objectives of the Watershed Management Program most rapidly. Although these plans might contain a conservative element in their use of pre-implementation surveys, modeling of proposed improvements, and post-implementation monitoring, they would often be aggressive in their approach and might allow soil disturbance or noise generation in greater proportions during construction than other alternatives. Management techniques outside of the aquatic and riparian environments (upland and urban areas), or those intended to provide other resource benefits, would be considered only as they relate to achieving the aquatic habitat objectives.

In addition to the required prescriptions, project managers would undertake the following:

- Consider the full range of management techniques available, including adaptive management strategies, and use the methods that best achieve the aquatic habitat objectives, as determined on a case-by-case basis; preferred techniques would include those involving in-channel modification, special vegetation management, and perhaps road management; other techniques, including some agricultural and forestry practices, might be supported on an as-appropriate basis as described in Appendix A.

## **7. Monitor Conditions and Evaluate Results (Alternative 3)**

Under Alternative 3, BPA would encourage and support more rigorous and comprehensive monitoring of management objectives than under the other alternatives.

Project managers would undertake the following:

- Monitor specific performance standards for status and trend of progress toward aquatic habitat objectives (established under Steps 4 and 5).
- File as-implemented and 1-year monitoring reports with BPA's Watershed Management Program.

## **8. Adapt Management According to New Information (Alternative 3)**

Under Alternative 3, BPA would encourage and support adaptive management actions that respond to problems or opportunities identified through monitoring. Project managers would also be encouraged to apply new knowledge, insights, or technologies that might contribute to meeting aquatic habitat objectives.

Project managers would undertake the following:

- Use monitoring information to guide annual management priorities and activity planning.
- Consult the literature and obtain peer review during the development of adaptive management strategies.

### **2.1.5 Alternative 4 - Cost and Administrative Efficiency Emphasis**

Under this alternative, in addition to the prescriptions under Alternative 2, BPA would standardize the planning and implementation process by supporting only the least costly approach(es) to achieving the project's aquatic habitat objectives. Achievement of more comprehensive watershed-scale objectives, such as protection or improvement of natural ecosystems and general species diversity, would occur only incidentally to achievement of the priority objectives.

As with Alternative 3 (Aquatic Habitat Objectives), BPA would support only those actions directly aimed at achieving the goals of the Watershed Management Program. However, whereas Alternative 3 placed an emphasis on aggressive (and generally more expensive) in-stream and riparian habitat improvement, projects funded under the management style of Alternative 4 could occur across the watershed. No preference would be given to in-stream, riparian, or upland areas, or to any one land use. Project managers would focus on minimizing administrative costs and maximizing site-specific application of watershed management funds. Managers would also be restricted to the least costly techniques available. Projects funded under this alternative would therefore provide more gradual habitat improvement through projects of smaller scope that might be removed from direct influence on aquatic habitat. Sustained, cumulative benefits would result in slow, steady improvements in fisheries and aquatic habitat, meeting only the minimum aquatic habitat objectives.

#### **1. Define the Area of Concern/Interest (Alternative 4)**

Under Alternative 4, BPA would consider support of focused planning that seeks out opportunities to minimize costs associated with actions required to achieve watershed management goals.

In addition to the required prescriptions, project managers would undertake the following:

- Select projects requiring a minimum financial output.
- If possible, obtain financial or land management partnerships for achieving project objectives, including agreements with non-electric power development management programs, to ensure coordinated and expeditious program implementation.

#### **2. Involve Stakeholders (Alternative 4)**

Under Alternative 4, stakeholder involvement would be streamlined, with fewer non-partner stakeholders identified and with a lower level of public involvement (e.g., fewer meetings and publications).

Efforts would focus on identifying stakeholders that could enter cooperative planning and share administrative and implementation costs. BPA staff would be much less involved than under the other alternatives, deferring almost completely to project proponents to develop and administer project-specific plans.

In addition to the required prescriptions, project managers would undertake the following:

- Develop a simple and efficient public involvement program that includes solicitation of public input (by posting in the local paper of record and in BPA's monthly newsletter).
- Wherever possible, form partnerships with government agencies or other entities so as to reduce project costs, increase benefits, and/or eliminate duplicate activities.
- Tie Project Management Plans into existing Federal or state management plans whenever possible (e.g., use or adapt fire management plans already developed for USFS, Bureau of Land Management (BLM), or State lands near the management area).
- Limit non-partner stakeholders to those with immediate interests in the project, such as adjacent landowners, representatives from local government, and jurisdictional tribal authorities.

### **3. Develop a Statement of the Desired Future Condition (Alternative 4)**

Under Alternative 4, BPA would support concepts that focus on watershed management with the lowest possible cost. Social, economic, and other resource conditions would be considered only as they relate to lowering costs of achieving and/or supporting aquatic habitat objectives.

In addition to the required prescriptions, project managers would undertake the following:

- Facilitate the development of a statement of the desired future condition, in cooperation with local, state, Federal, and tribal governments; and with non-governmental stakeholders.
- Identify a desired future condition that is self-sustaining (low-maintenance).
- Consider concepts that include sustainable revenue generation (e.g. crop production, timber harvest) to reduce initial or long-term Federal costs, consistent with aquatic habitat objectives.

### **4. Characterize the Site Conditions and Trends (Alternative 4)**

BPA would support only those efforts to characterize the ecosystem listed under the standard project management prescriptions common to all action alternatives (Alternative 2).

### **5. Establish Project Goals (Alternative 4)**

The overall goal under Alternative 4 would be to reduce Watershed Management Program administrative costs. BPA would encourage project plans to include self-sustaining or

low-maintenance management areas, and goals would emphasize developing low-maintenance projects with smaller budgets (or lower amounts of initial trust funds established by BPA to fund the project). Social, economic, and other resource conditions would be considered only as they support the least costly approach to achieving aquatic habitat objectives.

Project managers would undertake the following:

- Identify low-maintenance project areas that provide aquatic habitat benefits for a minimum investment.
- Include, as a project goal, sustainable ecological systems substantially independent of active management needs.
- For forest lands, adapt the recommended goals outlined in the Federal Wildland Fire Management Policy and Program Review (USDI and USDA 1995). (The report recommends that agencies develop a plan-by-plan strategy to introduce landscape-scale (larger-scale) prescribed burns across agency boundaries. The report also directs agencies to seek opportunities to enter into partnership with tribal, state, and private land managers to achieve this objective.)
- Include, as a project goal, sustainable revenue generation (e.g., crop production, timber harvest) to reduce initial or long-term operations and maintenance (O & M) costs, consistent with aquatic habitat objectives.

#### **6. Develop and Implement an Action Plan for Achieving the Goals (Alternative 4)**

Under Alternative 4, BPA would support a more passive strategy for achieving the objectives of the Watershed Management Program. Project managers would have to select the lowest-cost techniques that could achieve stated objectives.

In addition to the required prescriptions, project managers would undertake the following:

- Rely primarily on natural regeneration rather than active restoration to achieve objectives for vegetative cover.
- Develop management plans that do not require the more costly techniques such as engineered bank-protection structures, wetland creation, cropland terracing, alternative water supply systems, slope stabilization structures, and improvements or alterations to waste water management systems, unless use of such methods would clearly result in the least costly approach to achieving aquatic habitat objectives.
- Use partnerships with volunteer organizations and individuals as well as agencies for the implementation of many projects, particularly those requiring manual labor.
- For forest lands, enter a collective management agreement with Federal and state landowners to implement actions outlined in the Federal Wildland Fire Management Policy and Program Review (USDI and USDA 1995).

**7. Monitor Conditions and Evaluate Results (Alternative 4)**

Because emphasis would be placed on passive land management, natural regeneration of vegetation, and self-sustaining improvement projects, no specific monitoring requirements would be established under this alternative.

**8. Adapt Management According to New Information (Alternative 4)**

There would be no specific requirements. Managers would, however, seek and apply new information or approaches to improve administrative or cost efficiency.

**2.1.6 Alternative 5 - General Environmental Protection (Environmentally preferred)**

Under this alternative, in addition to the prescriptions under Alternative 2, BPA would standardize the planning and implementation process and provide coincidental benefits for fisheries, water quality, wildlife, recreation, local economic productivity (related to the natural or physical environment, and including, for instance, agricultural or forestry uses), and other resources. Projects would focus equally on fish habitat and other ecological needs throughout the watershed. Habitat improvements would occur in step with other ecological improvements.

Although all techniques addressed in this EIS could be used to improve fisheries and aquatic habitat, some would be more aggressive or "invasive" during implementation, and some might preclude benefits to other resources. Project managers would apply either selected or multiple, complementary techniques and program-wide measures as appropriate to protect all environmental resources, including soils, fish and water resources, wildlife, vegetation, and air quality. These measures would also be implemented in a manner that would avoid or reduce adverse impacts on land use and local economies dependent on agriculture, forestry, and recreation (see program-wide management measure discussions under each resource in Chapter 4). This alternative would minimize even the immediate and short-term disturbances of implementation.

**1. Define the Area of Concern/Interest (Alternative 5)**

Under Alternative 5, BPA would consider support of broad-scale planning that takes into account many different resources. The area of concern would be defined by watershed boundaries. A comprehensive and rigorous analysis of economic, social, cultural, and ecological conditions within each watershed boundary would be used to evaluate the management techniques that could be used to improve or maintain conditions in the watershed.

In addition to the required prescriptions, project managers would undertake the following:

- Identify those areas adjacent to or downstream from project sites that might be affected by or that might benefit from restorative actions, including adjacent landowners and uses, local economic bases (to the county level), tribal and other traditional uses, wildlife or fish travel corridors, downstream habitat, flow regime, and water quality.

- Identify locally limited or diminished social, economic, and environmental conditions, and seek opportunities to provide benefits to these conditions along with watershed management objectives.

## **2. Involve Stakeholders (Alternative 5)**

Under this alternative, BPA would support more stakeholder and public involvement than under the other alternatives. Stakeholder involvement would focus on identifying relevant environmental issues, concerns, and opportunities. Involvement might include more project information being presented to the public, including public meetings, advertisements, and/or fact sheets.

In addition to the required prescriptions, project managers would undertake the following:

- Elicit public input by a variety of means, including mailings, public notices, and public meetings and workshops early in the planning process; consider alternative means of eliciting public input, such as postings on the Internet and radio advertisements.
- Make special efforts to translate technical information into a format easily readable by lay persons.
- Prepare non-English-language publications where such publications are necessary to communicate issues to stakeholders.
- Involve local and downstream water users and local water agencies to ensure that project water users do not significantly affect productivity or production costs of water-dependent agriculture.
- Provide non-binding mediation to agencies or tribes disputing project management planning, including selection of a mutually acceptable mediator within 30 days of written request, all parties' commitment of best efforts to resolve the dispute in mediation, and suspension of related legal action for at least 60 days from the start of mediation and completion of two mediation sessions.

## **3. Develop a Statement of the Desired Future Condition (Alternative 5)**

Under Alternative 5, BPA would support concepts that seek improvement of a wide range of social, economic, and natural resource conditions so as to complement or increase efficiency of watershed management projects.

In addition to the required prescription, project managers would undertake the following:

- Identify a desired future condition that considers existing social and economic conditions.
- Identify a desired future condition that includes those principal benefits that the watershed provides to stakeholders, consistent with the primary goal of an effective Watershed Management Program.

#### **4. Characterize Site Conditions and Trends (Alternative 5)**

Because a wide range of social, economic, cultural, and natural resource issues would be considered under Alternative 5, BPA would encourage characterization of the full spectrum of environmental elements to ensure that watershed management projects protect and improve general environmental resources.

In addition to the required prescriptions, project managers would undertake the following:

- Identify all relevant ecological, social, and economic systems that might be affected by the project (long-term and short-term).
- Establish, for relevant environmental resources, environmental baseline conditions against which change can be measured (related to performance standards described in step 5).

#### **5. Establish Project Goals (Alternative 5)**

Under Alternative 5, BPA would encourage project managers to include social, economic, cultural, and natural resource protection and improvement goals that complement the soil conservation and aquatic resource protection goals of watershed management.

Project managers would undertake the following:

- Identify, as a project goal, protection and improvement of environmental resources other than water quality and aquatic habitat.
- Establish specific performance standards (goals) for relevant economic, social, cultural, and other environmental resources systems and features (e.g., wildlife, soils).
- Identify, as a project goal, improvement of forest, rangeland, and aquatic health, in cooperation with the BLM and USFS under their implementation of the Eastside and Upper Columbia River Basin draft EISs (USFS and BLM 1997a, 1997b).
- Include, as a project goal:
  - \* protection of high-quality native or other habitat or species of special concern (whether at the project site or not), including endangered, threatened, or sensitive species;
  - \* development of riparian or other habitat that could benefit water quality, fish, and wildlife;
  - \* mitigation of habitat or water quality losses in-place, in kind, wherever possible;
  - \* protection or improvement of natural ecosystems and species diversity over the long term; and
  - \* development of habitat that complements the activities of the region's tribes and state and Federal fisheries, wildlife, aquatic resource agencies, and private landowners.

**6. Develop and Implement an Action Plan for Achieving the Goals (Alternative 5)**

Under Alternative 5, BPA would support certain actions providing coincidental benefits for wildlife, recreation, local economic productivity, or other resources. Management techniques likely to have adverse environmental impacts would be minimized. Additional program-wide standards, guidelines, and mitigation measures would be established to ensure protection of environmental resources.

In addition to the required prescriptions, project managers would undertake the following:

- Support watershed management activities with coincidental benefits for wildlife (e.g., riparian habitat restoration).
- Apply the potential program-wide mitigation measures in Chapter 4, as appropriate, to protect the environment.
- Follow the BLM and USFS standards and guidelines developed to protect general environmental resources within the planning area (Eastside and Upper Columbia River Basin EISs; USFS and BLM 1997a, 1997b).
- Encourage economic uses consistent with aquatic habitat objectives (including crop, livestock, and timber production).
- Use available local supplies and labor to accomplish project goals and objectives.
- Identify opportunities for work skill training in conjunction with watershed management activities. For example, encourage construction contractors to use the local employment security office to hire staff for positions that involve on-the-job training.
- Encourage public use consistent with watershed management objectives; identify safe public recreational opportunities that do not jeopardize project aquatic habitat objectives or significantly alter local social settings.
- Maintain existing primary access roads open for public vehicular travel as practicable.
- Identify scientific educational opportunities.
- Conduct weed control programs using joint multi-agency planning.
- Promote the use of fertilizers with the lowest environmental cost, but that can still achieve acceptable results.
- Identify opportunities to foster public appreciation of the relationship between natural resources and tribal culture.
- Identify recreational opportunities suitable for physically disabled persons.
- Identify opportunities to foster public appreciation of watershed ecosystems, processes, and management activities.

## **7. Monitor Conditions and Evaluate Results (Alternative 5)**

Under Alternative 5, BPA would encourage and support more rigorous and comprehensive monitoring of general environmental resources than under the other alternatives.

Project managers would undertake the following actions:

- Monitor performance standards (established under Step 5) for local economic productivity and tax base, social conditions, cultural resource protection, and natural resources (e.g., soils and wildlife, in addition to fish, fish habitat, and water quality).

## **8. Adapt Management According to New Information (Alternative 5)**

Under Alternative 5, BPA would encourage and support adaptive management actions that respond to environmental problems or opportunities identified through monitoring. Project managers would also be encouraged to apply new knowledge, insights, or technologies that might contribute to environmental protection and improvement, consistent with the objectives of watershed management.

Project managers would undertake the following:

- Use monitoring information to guide annual management priorities and activity planning for protection and/or improvements of social, economic, and environmental conditions.

### **2.1.7 Alternative 6 - Balanced Action (BPA-preferred)**

BPA's preferred alternative would standardize the planning and implementation process by undertaking the prescriptions of Alternative 2 and by achieving balance among the purposes individually emphasized in the other Action Alternatives (3, 4, and 5): (1) meeting the aquatic habitat objectives of watershed management projects, (2) achievement of cost and administrative efficiency, and (3) protection and improvement of other environmental resources when those actions would support watershed management.

Under Alternative 6, BPA would support a wide range of actions to support fisheries, fish habitat, and aquatic ecosystems consistent with Council's goals and priorities. BPA would strongly emphasize achieving aquatic habitat objectives in the least costly manner. The preferred alternative would accept the environmental disturbances of project implementation, while planning for the prevention or control of unforeseen consequences and environmental responses through pre-project surveys, modeling of project parameters, and post-implementation monitoring. Habitat improvements would be moderate in quantity, but high in quality and sustained in benefit.

Fish habitat improvement would also be recognized as the project priority, but those projects that favor multiple resource benefits would receive funding. Project managers would apply program-wide measures as appropriate to afford the maximum benefit practicable to other environmental resources, including soils, vegetation, wildlife, and air quality. These measures would also be implemented in a manner that would avoid or reduce adverse impacts on land use and local economies dependent on agriculture, forestry, and recreation (see section on program-wide mitigation measures under each resource discussed in Chapter 4).

Alternative 6 is most similar to the current situation in terms of maintaining the balanced management strategy under which proposed management projects are funded. The primary difference between this preferred alternative and the existing situation (No Action) is that, under Alternative 6, (1) BPA would establish a standard planning process and (2) project managers would apply program-wide mitigation measures, as appropriate, to protect the environment. These two differences would allow BPA to implement Watershed Management Programs or projects more efficiently and with greater consistency than under the current case-by-case approach.

### **1. Define the Area of Concern/Interest (Alternative 6)**

Under Alternative 6, project managers would focus primarily on those watersheds that would benefit most from management techniques (Appendix A). These watersheds would be defined as those that:

- are significantly degraded and need to be improved to an acceptable level of water and aquatic habitat quality, or
- contain habitat of exceptional quality that should be protected from degradation, or
- are at special risk of becoming degraded if watershed management actions are not implemented.

Project managers would seek to establish projects that can take advantage of existing land management systems or that could eliminate existing management inefficiencies.

If possible, establish partnerships for achieving project objectives, including agreements with non-electric power development management programs, to ensure coordinated and expeditious program implementation.

### **2. Involve Stakeholders (Alternative 6)**

Under Alternative 6, project managers would actively seek public input and would plan cooperatively with government agencies or other entities to maximize planning and management efficiencies.

In addition to the required prescriptions, project managers would undertake the following:

- Develop an effective public involvement program that includes a variety of ways to solicit public input: mailings, public notices and public meetings and workshops both early in

and throughout the planning process; notices in the local paper of record and in BPA's monthly newsletter; and alternative means such as postings on the Internet and radio advertisements.

- Wherever possible, form partnerships with government agencies or other entities so as to reduce costs, increase benefits, and/or eliminate duplicate activities.

### **3. Develop a Statement of the Desired Future Condition (Alternative 6)**

Under Alternative 6, in addition to the required prescriptions, BPA would support concepts that keep long-term management costs low, while ensuring coordination with watershed-level planning efforts.

Project managers would undertake the following:

- Facilitate the development of a statement of desired future condition, in cooperation with watershed activities.
- Identify a desired future condition that is self-sustaining (low-maintenance), including the development of a sense of responsibility and "ownership" in the general public for watershed conditions.
- Consider concepts that include sustainable revenue generation (e.g. crop production, timber harvest) to reduce initial or long-term Federal costs, consistent with aquatic habitat objectives.

### **4. Characterize the Site Conditions and Trends (Alternative 6)**

With the primary focus on achievement of aquatic habitat objectives, BPA would support the collection of the information necessary to achieve watershed management objectives and to monitor results.

In addition to the required prescriptions, project managers would undertake the following:

- Identify and map basic physical conditions such as soil conditions, topography, hydrology, vegetation, and biological information within the proposed areas for watershed management projects.
- Establish baseline information for watersheds against which change can be measured (related to the "measurable aquatic habitat objective" standard included in step 5).

### **5. Establish Project Goals (Alternative 6)**

Under Alternative 6, project managers would establish management goals for each project, including those goals established by the Council.

Project managers would undertake the following:

- Establish measurable aquatic habitat and physical habitat objectives (e.g., water quality standards, number of habitat units, list of indicator species).
- Include, as project goals:
  - \* protection and improvement of a variety of fish habitats, including spawning beds, overwintering and rearing areas, resting pools, and protective cover, especially of high-quality native or other habitat for species of special concern (whether at the project site or not), including endangered, threatened, or sensitive species;
  - \* development of riparian habitat that could benefit water quality, fish, and wildlife;
  - \* protection of high-quality native species or species of special concern (whether at the project site or not), including endangered, threatened, or sensitive species;
  - \* mitigation of habitat losses in-place, in kind, wherever possible;
  - \* protection or improvement of natural ecosystems and species diversity over the long term;
  - \* development of habitat that complements the activities of the region's tribes and state and Federal fish, wildlife, water resource agencies, and private landowners; and
  - \* a future condition that is self-sustaining after initial improvements have been completed.

#### **6. Develop and Implement an Action Plan for Achieving the Goals (Alternative 6)**

Under Alternative 6, BPA would consider support of a wide range of management techniques and other actions to achieve watershed management objectives.

In addition to the required prescriptions, project managers would undertake the following:

- Consider the full range of management techniques available, including adaptive management strategies, and use the methods that best achieve the aquatic habitat objective in a cost-effective manner, as determined on a case-by-case basis. See Appendix A for a complete list of techniques.
- Apply the potential program-wide mitigation measures in Chapter 4, as appropriate, to protect the environment.
- For forest lands, enter a collective management agreement with Federal and state landowners to implement actions outlined in the Federal Wildland Fire Management Policy and Program Review (USDI and USDA 1995).
- Favor watershed management activities with coincidental benefits for wildlife, e.g., riparian habitat restoration.
- Use available local supplies and labor to accomplish project goals and objectives.

- Identify opportunities for work skill training in conjunction with watershed management activities. For example, encourage construction contractors to use the local employment security office to hire staff for positions that involve on-the-job training.
- For projects involving vegetation control, conduct weed control programs using joint multi-agency planning. Protocols could be adapted from the USFS Final EIS for Managing Competing and Unwanted Vegetation (USFS 1988).
- Consider recreational opportunities suitable for physically disabled persons where existing access allows.

#### **7. Monitor Conditions and Evaluate Results (Alternative 6)**

Under Alternative 6, BPA would encourage and support decision-oriented monitoring that can be used to evaluate the success of watershed management efforts and to make necessary adjustments to better achieve objectives.

Project managers would undertake the following:

- Monitor specific performance standards for status and trend of progress toward aquatic habitat objectives (established under Steps 4 and 5).
- File as-implemented and 1-year monitoring reports with BPA's Watershed Management Program.

#### **8. Adapt Management According to New Information (Alternative 6)**

Under Alternative 6, BPA would encourage and support adaptive management actions that respond to problems or opportunities identified through monitoring. Project managers would also be encouraged to apply new knowledge, insights, or technologies that may contribute to meeting aquatic habitat objectives.

Project managers would undertake the following:

- Use monitoring information to guide annual management priorities and activity planning.
- Consult the literature and obtain peer review during the development of adaptive management strategies.

### **2.1.8 Available Management Techniques**

While the alternatives present a range of possible strategies, goals, and procedural requirements for watershed management projects, Project Management Plans would need to include actual site-specific techniques to support activities and achieve goals. The standardized requirements would influence technique implementation. Table 2-1 lists techniques that may be employed under some or all of the alternatives. The techniques are generally organized by land use and land management practice. In most cases, several complementary techniques could be included in a Project Management Plan. For example, techniques requiring ground disturbance might be accompanied by techniques aimed at vegetative restoration and other erosion control on the site. Appendix A provides a description of each technique.

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**Table 2-1. Relative Use of Techniques Among Alternatives (10 pages)**

Technique	Alt 1: No Action (assuming case-by-case decisions)	Alt 2: Base Response	Alt 3: Aquatic Habitat Objectives	Alt 4: Cost and Admin. Efficiency	Alt 5: General Environ- mental Protection	Alt 6: Balanced Approach
<b>IN-CHANNEL MODIFICATIONS AND HABITAT IMPROVEMENT TECHNIQUES</b>						
Modeling the Effects of River Channelization	-	-	+	-	+	
Prohibit Further Channelization			+	+		+
Restoration of Channelized River and Stream Reaches	-	-	+	-	+	
Pre-implementation Evaluation of Proposed Improvements			+	-		+
Install Grade Control Structures and Check Dams			+	-	+	
Install Large Woody Debris Structures	+	+	+	-		+
Install Other Habitat Complexity Structures	+	+	+	-		
Bank Protection through Vegetation Management	+	+	+		+	+
Structural Bank Protection Using Bioengineering Methods	+	+	+		+	+
Structural Bank Protection using Engineered Structures		+	+	-		
Remove Debris Functioning as Barriers to Passage	-	-		-		-
Hardened Fords	-	-			+	
Culvert Removal/Replacement to Improve Fish Passage			+	-	+	+
Reduce Scour and Deposition at Hydraulic Structures			+			+
Fish Passage Enhancement—Fishways	-	-	+	-	-	
Spawning Habitat Enhancements			+	-		
Rearing Habitat Enhancements			+	-	+	

+ = frequent use

★ = moderate use

- = infrequent use

X = not used

**Table 2-1. Relative Use of Techniques Among Alternatives (con't)**

<b>Technique</b>	<b>Alt 1: No Action (assuming case-by-case decisions)</b>	<b>Alt 2: Base Response</b>	<b>Alt 3: Aquatic Habitat Objectives</b>	<b>Alt 4: Cost and Admin. Efficiency</b>	<b>Alt 5: General Environ- mental Protection</b>	<b>Alt 6: Balanced Approach</b>
<b>SPECIAL VEGETATION TREATMENT TECHNIQUES, INCLUDING TECHNIQUES FOR WETLANDS AND RIPARIAN AREAS</b>						
Maintain Healthy Riparian Plant Communities	+	+	+	+	+	+
Plant/Protect Conifers in Riparian Area	+	+	+	★	+	+
Creation of Wetlands to Provide Near-Channel Habitat and Store Water for Later Use	-	-	+	-	+	-
Provide Filter Strips to Catch Sediment and Other Pollutants	★	★	+	★	+	+
Plant Windbreaks	-	-	-	★	+	-
Native Seeds Inventories	★	★	★	★	+	-
Avoid Exotic Species	+	+	+	+	+	+
Construct Wetlands Treatment Systems	-	-	-	-	-	-
Mechanical Vegetation Removal	-	-	+	★	-	+
Biological Vegetation Control	-	-	-	-	-	-
Hand Pulling	-	-	+	-	+	+
Prescribed Burning	-	-	+	★	-	-
Reduce Shade to Increase Primary Food Production	x	x	-	x	x	x
Enhance Large Woody Debris Recruitment	-	-	+	-	-	-
Acquisition of Sensitive Riparian Resources	-	-	+	-	-	-
<b>AGRICULTURAL MANAGEMENT TECHNIQUES--CROPS AND GENERAL</b>						
Plant/Protect Vegetative/Conservation Cover	+	+	+	★	+	+
Conservation Cropping Sequence	+	+	+	-	+	+
Conservation Tillage	-	-	+	-	+	-
Contour Farming	+	+	+	+	+	-
Contour Orchards and Fruit Crops	-	-	-	-	+	-

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<b>AGRICULTURAL MANAGEMENT TECHNIQUES--CROPS AND GENERAL (con't)</b>						
Cover and Green Manure Crop	-	-	-	-	+	-
Critical Area Planting	-	-	+	-	+	+
Delayed Seed Bed Preparation	-	-	-	-	+	-
Grasses and Legumes in Rotation	+	+	-	-	+	-
Contour Stripcropping	+	+	-	-	+	-
Field Stripcropping	+	+	-	-	+	-
Terracing	+	+	-	-	-	-
Diversion Ditch	+	+	-	-	+	-
Field Border	-	-	-	-	+	+
Filter Strip	-	-	+	-	+	+
Grassed Waterway	-	-	+	-	+	+
Sediment Basins	+	+	+	-	+	+
Sediment and Water Control Basins	+	+	+	-	+	+
Zoning/Land Use Planning	-	-	-	-	-	-
Plant Windbreaks	-	-	-	-	+	-
Avoid Impounding Needed Flushing Flow	-	-	+	-	+	-
Release Impounded Water to Flush Gravels	-	-	+	-	-	-
Chemical Management Plans	+	+	-	+	+	+
Fertilizer Application: Rates and Timing	+	+	-	-	+	+
Fertilizer Recovery and Stabilization	-	-	-	-	+	+
Evaluate Field Limitations	-	-	-	-	+	-
Equipment Calibration and Use	-	-	-	-	+	-
Alternative Pest Management Strategies	-	-	-	-	+	-
Herbicide/Pesticide Application	-	-	-	+	-	-
Apply Herbicides/Pesticides Selectively	-	-	-	+	+	-

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**Table 2-1. Relative Use of Techniques Among Alternatives (con't)**

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<b>AGRICULTURAL MANAGEMENT TECHNIQUES--CROPS AND GENERAL (con't)</b>						
Herbicide/Pesticide Application Rates	+	+	+	+	+	+
Anti-Backflow Devices on Hoses	+	+	+	+	+	+
Enforce Current Herbicide/Pesticide Use Regulations	+	+	+	+	+	+
Aerial Spray Applications: Buffer Zones	+	+	+	+	+	+
Aerial Spray Applications: Atmospheric Conditions	+	+	+	+	+	+
Slow-Release Fertilizers	+	+	+	+	+	+
Spill Contingency Planning	+	+	+	+	+	+
<b>AGRICULTURAL MANAGEMENT TECHNIQUES--IRRIGATION</b>						
Irrigation Water Management	+	+	+	+	+	+
Water Measuring Devices	+	+	+	+	+	+
Soil and Crop Water Use Data	-	-	+	-	+	+
Soil Water by Tensiometers	-	-	+	-	+	+
Drip or Trickle Irrigation	-	-	+	-	+	+
Sprinkler Irrigation	+	+	+	-	+	+
Irrigation by Surface or Subsurface Means	+	+	-	+	+	+
Water Conveyance: Ditches and Canals	+	+	-	+	+	+
Water Conveyance: Ditch and Canal Lining	-	-	+	-	+	+
Water Conveyance: Pipeline	+	+	+	+	+	+
Tailwater Recovery	+	+	+	+	+	+
Filter Strip	+	+	+	+	+	+
Surface Drainage Ditch	+	+	-	+	+	+
Subsurface Drainage Collection	+	+	-	+	+	+
Water Table Control	+	+	+	-	+	+
Backflow Safety Devices	+	+	-	+	+	+

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**Table 2-1. Relative Use of Techniques Among Alternatives (con't)**

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<b>AGRICULTURAL MANAGEMENT TECHNIQUES--IRRIGATION (con't)</b>						
Limit Interwatershed Diversions and Returns	-	-	+	-	+	+
Purchase/Negotiate Water Right	-	-	+	-	+	+
File for In-stream Water Right	-	-	+	-	+	+
Well Construction for Primary Water Source	-	-	+	-	+	+
Impoundments for Water Source	-	-	-	-	-	-
Avoid Excess Irrigation Flows	-	-	-	-	+	+
Intake and Return Diversion Screens	+	+	+	+	+	+
Protect Springs	-	-	+	-	+	+
Consolidate/Replace Irrigation Diversion Dams	-	-	-	-	-	-
<b>AGRICULTURAL MANAGEMENT TECHNIQUES--ANIMAL FACILITIES</b>						
Heavy Use Area Protection	-	+	+	-	+	+
Manage Runoff from Impervious Surfaces	-	+	+	-	+	+
Waste Management Plan	-	+	+	-	+	+
Waste Storage and Treatment	-	+	+	-	+	★
Land Application of Wastes	+	+	-	-	-	-
Composting Facility	-	-	-	-	+	-
Constructed Wetlands for Treatment of Agricultural Wastes	-	+	+	-	+	-
Commercial Disposal Service	-	-	-	-	-	-
Landfill Burial of Wastes	-	-	-	-	-	-
Incinerate Wastes	-	+	-	-	-	-
Hardened Fords for Livestock Crossings of Streams	-	-	+	-	+	+
Seasonal Use of Fords and Surface Waters	-	+	+	-	+	+
Alternative Water Sources	-	+	+	-	+	+

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<b>AGRICULTURAL MANAGEMENT TECHNIQUES--GRAZING</b>						
Deferred Grazing	+	+	★	★	+	★
Planned Grazing System	+	+	+	+	+	+
Control Grazing Intensity	+	+	+	-	+	+
Pasture and Hayland Management	+	+	+	+	+	+
Water Supply: Pipeline	-	-	+	-	-	-
Water Supply: Ponds	+	+	+	+	-	-
Water Supply: Trough	+	+	+	+	+	-
Water Supply: Well	+	+	+	+	+	+
Water Supply: Spring Development	+	+	+	-	+	-
Access: Fencing	+	+	+	+	+	+
Access: Trails/Fords at Stream Crossings	+	+	+	-	+	+
Vegetation Stabilization: Pasture Planting	+	+	-	+	+	+
Vegetation Stabilization: Range Seeding	+	+	-	+	+	-
Vegetation Stabilization: Critical Area Planting	+	+	+	+	+	+
Vegetation Stabilization: Brush/Weed Management	+	+	-	+	+	+
Monitor Wildlife	+	+	-	+	+	-
Wildlife Harvesting	-	-	-	-	-	-
Heavy Use Area Management	+	+	+	+	+	+
<b>ROAD MANAGEMENT TECHNIQUES</b>						
Pre-plan Road Location	+	+	+	+	+	+
Install Hydraulic Structures at Low Streamflows	+	+	+	-	+	-
Minimize Erosion and Sedimentation During Stream Crossing Construction	+	+	+	-	+	+

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<b>ROAD MANAGEMENT TECHNIQUES (con't)</b>						
Divert Water Around Construction of Larger Structures			+		-	+
Avoid Stream Crossings Outside of Construction Windows	+	+	+	+	+	+
Reduce Risk of Road-Related Mass Failures	+	+		+	+	+
Reduce Risk of Road-Related Surface Erosion					+	+
Drainage Control to Minimize Erosion and Sedimentation					+	+
Avoid Construction During Inclement Weather					+	+
Erosion Control and Revegetation at Project Completion					+	+
Slash Management	+	+	+	+	+	+
Intersections with Paved Roads						
Grade Road					+	+
Ditch and Culvert Cleaning			+		+	+
Grassed Road Surface Management	-	-		-	+	
Remove Temporary Stream Crossings			+		+	+
Access Management					+	+
Road Closure					+	+
Water Bars					+	+
Inspect Closed Roads					+	+
Relocate Roads						
<b>FOREST MANAGEMENT TECHNIQUES</b>						
Streamside Mgmt Areas (SMA) Widths	+	+	+	+	+	+
Minimize Disturbances within SMA	+	+	+		+	+
Locate Landings and Roads Outside SMA	+	+		+	+	+

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<b>FOREST MANAGEMENT TECHNIQUES (con't)</b>						
Appropriate Chemical Usage in SMA	+	+	+	+	+	+
Directional Falling of Trees	+	+	-	+	+	+
Harvesting Restrictions	+	+	-	+	+	+
Removal of Introduced Trees and Slash	+	+	-	-	+	+
Timber Harvest Unit Design	+	+	-	-	+	+
Determining Guidelines for Yarding Operations	+	+	-	-	+	+
Stream Channel Protection During Timber Harvest	+	+	+	-	+	+
Equipment Servicing	+	+	-	+	+	+
Prescribed Burning	+	+	-	+	+	+
Stand Thinning	+	+	-	+	+	+
Plant/Preserve Trees in Understocked Areas	+	+	-	+	+	+
Manage Stands to Improve Snowpack	-	-	+	-	-	+
Study Reward/Penalty System	+	+	-	+	+	+
Seed and Species Selection	+	+	+	+	+	+
Priority Areas	+	+	+	+	+	+
Optimum Seeding Periods	+	+	+	+	+	+
Mulching	-	-	-	-	+	+
Fertilization	+	+	-	+	+	+
Site Protection	+	+	-	+	+	+
Monitor Revegetated Areas	+	+	-	+	+	+
Vegetate Steep Slopes	+	+	+	+	+	+
Interim Stabilization Methods	+	+	-	+	+	+
Aggressive Fire Suppression	+	+	-	+	+	+

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<b>FOREST MANAGEMENT TECHNIQUES (con't)</b>						
Natural Fire Control	+	+	+	+	+	+
Prescribed Burning to Reduce Fuels	+	+	-	-	+	+
Seasonal Grazing Management to Reduce Fuels	-	-	+	+	+	+
Wildfire Contingency Watershed Restoration Plans	+	+	+	+	+	+
<b>URBAN AREA TECHNIQUES</b>						
Zoning/Land Use Planning	+	+	-	+	+	+
Urban Runoff Facilities	+	+	+	+	+	+
Limit Future Development of Sewer Systems	-	-	-	-	+	+
Improve Existing Sewer Systems	+	+	-	-	+	+
Industrial/Construction Chemicals/Fuels	+	+	-	+	+	+
Prohibit Further Channelization	+	+	+	+	+	+
Avoid Building on Floodplains	+	+	+	+	+	+
Public Education Programs	+	+	+	+	+	+
Recycling Programs	+	+	-	-	+	+
Lawn Care and Landscaping	+	+	+	-	+	+
Encourage Onsite Recycling of Yard Trimmings	+	+	-	+	+	+
Biodegradable Cleaners	+	+	-	+	+	+
Pet Excrement	-	-	-	+	+	+
Storm Drain Stenciling	+	+	-	+	+	+
Parking Lot Design and Street Maintenance	+	+	-	+	+	+
Water Conservation Programs	+	+	+	+	+	+

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<b>URBAN AREA TECHNIQUES (con't)</b>						
Septic System Additives	*	*	-	*	+	*
Litter Control	*	*	-	*	+	+
Adopt-a-Stream Programs	-	-	+	*	+	+
Direct Pollutants Away from Bridges	*	*	*	*	+	*
Restrict Use of Bridge Scupper Drains	-	-	*	*	+	*
Construction: Erosion and Sediment Control Plans	+	+	*	*	+	+
Construction: Erosion and Sediment Control Structures	+	+	*	*	+	+
Construction: Inspect Erosion and Sediment Control Structures	+	+	-	*	+	+
Construction: Minimize Runoff to/from Site	*	*	+	-	+	+
Road Salt Storage and Application	*	*	-	*	*	*
Alternative Deicing Materials	-	-	-	-	+	*
Accumulated Snow Disposal	*	*	*	*	*	*
<b>RECREATION MANAGEMENT TECHNIQUES</b>						
Relocate Trails and Campgrounds	*	*	-	-	*	*
Implement Recreational Permit System	-	-	-	-	+	*
Improve Campground Design	*	*	*	*	+	*
Outdoors Education Program	*	*	*	*	+	+
Fence Sensitive Areas from Recreationists	*	*	+	*	+	*
Implement Pack In/Pack Out Policy	+	+	-	*	+	*
Sanitation Services	+	+	-	*	+	*
Install Pump or Self-Composting Toilets	*	*	-	*	+	*

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<b>RECREATION MANAGEMENT TECHNIQUES (con't)</b>						
Close Stream to Fishing to Protect Sensitive Fish Species	+	+	+	+	+	+
Seasonal Sport Fishery Closures	+	+	+	+	+	+
Provide Alternative Sport Fishing Locations				-	+	
Construct Well to Provide Water to Recreationists	+	+	-	-	+	
Management of Off-Road Vehicle Use						
<b>MINING AND MINE RECLAMATION TECHNIQUES</b>						
Rainfall Management	-			-	+	
Surface Water Control	-			-	+	
Fish and Wildlife Protection	-			-	+	
Treatment of Mine Waste	-			-	+	
Treatment of Mine Waste Runoff	-			-	+	
Revegetation of Waste Disposal Sites	-			-	+	
Monitoring Mine Waste Disposal Sites	-			-	+	
Leaching for Remediation	-	-	-	-		-
Gravel Mining Window	+	+	+	+	+	+
Regulate Stream Dredging	-	-	+	+	+	

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## **2.1 COMPARISON OF ALTERNATIVES AND SUMMARY OF IMPACTS**

Each of the five action alternatives identifies a different approach to standardizing the planning and implementation of individual watershed management projects funded by BPA.

Under **Alternative 1, No Action**, BPA would continue to implement each watershed management project on a case-by-case basis.

**Alternative 2, Base Response**, contains only those prescriptions required by law, and represents the minimum restrictions and guidance that BPA must place on project managers developing BPA-funded watershed management projects. Alternatives 3 through 6 also contain these minimum requirements.

Under **Alternative 3, Aquatic Habitat Objectives Emphasis**, BPA would support only those actions intended specifically to achieve fish and fish habitat (aquatic habitat) objectives; however, project managers would retain a great deal of flexibility to adapt application of specific techniques and other actions to best meet the aquatic habitat objectives of the project. Other resources and issues would be considered only to the minimum extent required by law, as outlined in Alternative 2, Base Response.

Under **Alternative 4, Costs and Administrative Efficiency Emphasis**, BPA would support only the least costly approach to achieving the project's aquatic habitat objectives. Project managers would be very limited in the techniques and resources available to them the implement their proposed projects.

Under **Alternative 5, General Environmental Protection**, the environmentally preferred alternative, BPA would support actions providing coincidental benefits for wildlife, recreation, local economic productivity (related to the natural or physical environment), or other resources. Project managers would also apply potential program-wide measures as appropriate to protect the environment. Project managers could consider a wide range of project objectives under this alternative, although a wide range of objectives might reduce the resources available for meeting the project's aquatic habitat objectives.

**Alternative 6, Balanced Response**, BPA's preferred alternative, seeks to achieve balance among the purposes individually emphasized in Action Alternatives 3 through 5: (1) meeting the aquatic habitat objectives of watershed management projects, (2) achievement of cost and administrative efficiency, and (3) protection and improvement of other environmental resources when such action would support aquatic resource objectives. Alternative 6 would result in new management projects similar to those previously developed. The primary difference between the preferred alternative and the existing situation (No Action) is that, under Alternative 6, (1) BPA would establish a standard planning process and (2) project managers would apply program-wide measures as appropriate to protect other environmental resources. These two differences would allow BPA to implement watershed management programs more efficiently and with greater consistency than under the current case-by-case approach.

Table 2-2 provides a summary and comparison of the environmental consequences of each alternative.

Table 2-3 provides a comparison of the alternatives against the decision factors (achievement of aquatic habitat objectives, cost and administrative efficiency, compliance with laws and regulations, and protection and improvement of environmental resources).

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Table 2-2. Summary of Affected Environment and Environmental Consequences (three pages)

Environmental Resource	Existing Conditions	Alternative 1: No Action	Alternative 2: Base Response (Impacts Common to All Action Alternatives)	Alternative 3: Aquatic Habitat Objectives Emphasis	Alternative 4: Cost and Administrative Efficiency Emphasis	Alternative 5: General Environmental Protection (Environmentally preferred)	Alternative 6: Balanced Action (BPA-preferred)
Soils	Diverse across the Columbia River Basin. Sources include glacial till, basalt erosion, windborne loess deposits, and volcanism. Soils are vulnerable to erosion, which can lead to poor soil productivity and water quality.	Based on recently completed projects, only minor soil disturbances would occur during implementation of projects. Potential problems higher than under Action Alternatives due to less planning and data collection.	Minor soil disturbances with project implementation; soil conditions improve as adopted planning process assures identification and protection of problem soil areas.	Relatively high amounts of short-term erosion might occur, particularly in riparian areas, during initial project phases; however, over the long-term, soil conditions would greatly improve over existing conditions.	Minor, short-term soils impacts might occur with project implementation; impacts occur across watershed, including upland areas, with less emphasis on riparian areas.	Soils are protected with only minor, short-term construction impacts. Some revegetation efforts, where disturbance is helpful to establishment, may be slow to restore site.	Generally beneficial to soils. A moderate level of short-term soil erosion would occur at some new sites as projects are implemented, followed by increasing stability in both riparian and upland areas.
Fish/Water Resources and Quality	The Columbia River Basin's water resources provide tribal values and use, irrigation, recreation, fish and wildlife habitat, transportation corridors, drainage, flood control, drinking water, and power. Soil erosion is one of the most common sources of water-quality and fish-habitat reductions.	Initial implementation of some projects may cause temporary exceedences of state water quality (sediment) standards due to construction disturbance of soils and channels. Overall, fish and water quality would benefit as aquatic and riparian habitat is restored and/or protected.	Ground- and channel-disturbing activities potentially reduce water quality and fish habitat in the short term; consistent planning process identifies and protects high-value fish habitat and water quality reaches.	Aggressive in-channel and riparian focus has greatest potential to generate short-term water quality exceedences and disturb fish. However, benefits to fish are often immediate, rapid, and sustained increases in a variety of habitats.	Minor, short-term impacts on fish and water quality due to less aggressive in-channel work; some immediate but primarily gradual improvements in fish habitat and water quality.	Short-term construction-related impacts are minor and few as emphasis on multiple resource benefits and protection promotes projects that are smaller in size and scope (least aggressive). Fish habitat increases gradually, in step with other environmental improvements.	Moderate improvements in fish and riparian habitat, including immediate and sustained benefits to fish. Short-term, construction-related impacts are mitigated to the extent practicable.
Wildlife	Many sensitive wildlife species in the Columbia River Basin are associated with native shrub-steppe and old growth forests. Wetlands, riparian areas, cliffs, talus, and caves are other important habitat types.	Some wildlife disturbance would occur when projects first begin, though Sensitive and T&E species are protected. Coincidental wildlife benefits accrue with aquatic/riparian habitat restoration.	Some wildlife disturbance occurs with project implementation/construction; consistent planning process, program-wide requirements identify, protect high-value wildlife habitat, water quality.	Greatest disturbance assoc. with project implementation relative to other alt's. Emphasis on aquatic and riparian habitat improvement yields greatest incidental wildlife benefits, long-term.	Low potential for initial disturbance to wildlife because of overall emphasis on passive, rather than active management techniques. Lowest potential for long-term incidental benefits.	No significant adverse impacts expected, as multiple environmental benefits are emphasized.	Some minor wildlife impacts associated with project implementation. Moderate potential for long-term incidental benefits, primarily from riparian habitat improvements.

<b>Environmental Resource</b>	<b>Existing Conditions</b>	<b>Alternative 1: No Action</b>	<b>Alternative 2: Base Response (Impacts Common to All Action Alternatives)</b>	<b>Alternative 3: Aquatic Habitat Objectives Emphasis</b>	<b>Alternative 4: Cost and Administrative Efficiency Emphasis</b>	<b>Alternative 5: General Environ- mental Protection (Environmentally preferred)</b>	<b>Alternative 6: Balanced Action (BPA-preferred)</b>
<b>Vegetation</b>	The Columbia River Basin contains three general vegetation zones: coniferous forest, sagebrush, and perennial grassland. Crop production, grazing, forestry, and hydroelectric projects have greatly altered Basin vegetation types, and native plant communities are relatively rare.	Native plant communities would continue to benefit (after initial disturbance), particularly in planted or seeded riparian areas.	Native plant communities benefit as planning process and program requirements help identify the best approaches to vegetation management.	The emphasis on in-channel and riparian improvements increases potential for construction-related damage. In the long-term, healthy riparian communities are increased relative to other alternatives.	Minor construction disturbance of riparian vegetation areas; natural and assisted revegetation and less aggressive mitigation methods result in gradual improvements in vegetation.	Minor construction disturbance on riparian vegetation areas; natural and assisted revegetation and less aggressive mitigation methods result in gradual improvements in vegetation.	Relatively minor initial disturbance of vegetation, including in riparian areas. In the long-term, riparian communities experience moderate improvements in stand structure and composition.
<b>Land and Shoreline Use</b>	Land ownership includes large areas of private crop- and forest land; private residential, recreational, and industrial properties; and state, tribal, and Federal ownership.	Without program-wide standards, impacts on land and shoreline use could vary widely, depending on the circumstances surrounding each project.	Land use impacts decrease relative to No Action because planning approach identifies land use issues and concerns.	Land use changes, if any, are most likely in riparian areas due to influences of channel and riparian improvements on water flow, water tables, and riparian changes.	Low potential for significant changes in land or shoreline uses due to project scope.	Low potential for significant changes in land and shoreline uses due to project scope and program-wide mitigation measures.	Minor risk of land use changes due to influences of channel and riparian improvements on water flow, water tables, and riparian changes mitigated by program-wide mitigation measures.
<b>Cultural and Historic Resources</b>	Most identified cultural resources in the Columbia River Basin are archeological sites such as campsites, rock art, burial grounds, and rock shelters. There are 13 Federally recognized Native American tribes with interests and/or reservations in the Columbia River Basin within the United States.	BPA would continue to lead cultural resource protection efforts on a project-by-project basis.	Potential impacts on cultural resources would be directly related to the amount of ground disturbance that would occur. This alternative presents the minimum level of protection required by law.	Highest potential for ground-disturbing activities related to riparian habitat improvement and correspondingly high potential for disturbing unknown cultural resources.	Relatively minor potential for impacts; new ground disturbance minor because of projects of smaller scope and greater emphasis on projects in previously disturbed areas.	Extra efforts to minimize ground disturbance and protect cultural resources reduce the potential for impacts. Recreational, economic, and other post-implementation uses may result in some disturbances.	A moderate amount of ground would be disturbed as new projects are implemented. Surveys would be conducted where needed to avoid impacts on cultural or historic resources.

<b>Environmental Resource</b>	<b>Existing Conditions</b>	<b>Alternative 1: No Action</b>	<b>Alternative 2: Base Response (Impacts Common to All Action Alternatives)</b>	<b>Alternative 3: Aquatic Habitat Objectives Emphasis</b>	<b>Alternative 4: Cost and Administrative Efficiency Emphasis</b>	<b>Alternative 5: General Environ- mental Protection (Environmentally preferred)</b>	<b>Alternative 6: Balanced Action (BPA-preferred)</b>
<b>Economics</b>	Major sources of employment in the Columbia River Basin include agriculture, forestry, real estate, retail, services, and government. Much of the affected environment is rural and sparsely populated.	No program-wide standards to protect natural resource-based economies, although BPA typically would consider such protection on a case-by-case basis.	Projects employ temporary and/or seasonal employment; planning approach identifies opportunities for incorporating local skills and resources consistent with local, generally natural-resource-based, economies.	Similar to Alternative 2; greatest potential for short-term economic benefits because of emphasis on aggressive projects.	Similar to Alternative 2; small potential for short-term economic benefits; greatest use of volunteer efforts.	Similar to Alternative 2; moderate benefits because providing coincidental benefits to local economies would be a project goal.	Similar to Alternative 2; moderate benefits to local economies.
<b>Recreation and Visual</b>	The Columbia River Basin provides a variety of outdoor recreational opportunities. Many people from the more populated western Oregon and Washington visit rural Basin areas for recreation.	Recreational opportunities developed on a case-by-case basis as they support aquatic habitat objectives; some construction-related impacts.	Recreational experiences and opportunities identified and protected by consistent planning approach; some construction-related impacts.	Improvements to recreational facilities and experiences purely incidental to the achievement of aquatic habitat objectives; greatest potential for short-term recreation impacts in riparian areas.	Coincidental benefits to recreation coincident with achievement of aquatic habitat objectives; variable but short-term impacts on recreational facilities.	Benefits to recreation greatest and in step with achievement of aquatic habitat objectives; least potential for disturbance to recreational facilities and experiences.	Improvements to recreational facilities and experiences purely incidental to the achievement of aquatic habitat objectives; some potential for minor, short-term recreation impacts in riparian areas.
<b>Air Quality</b>	Most of the Columbia River Basin is rural and generally has fewer air quality problems than do the population centers. Smoke from field burning and wind-borne dust sometimes create air quality problems in the Basin.	Exhaust emissions and noise from heavy equipment, smoke emissions from prescribed burning, and wind drift of applied herbicides and pesticides would vary on a case-by-case basis.	Local reductions in air quality and visibility. State and local regulations would be followed.	Relatively few impacts (noise, dust, exhaust emissions) due to emphasis on in-channel and riparian enhancements.	Greatest potential use of prescribed burning (and smoke emissions) to treat large areas of vegetation; moderate potential for aerial applications of fertilizers and herbicides.	Low potential for impacts due to low level of use for prescribed fire, fertilizers, herbicides, pesticides, and large equipment (dust, emissions).	Minor impacts associated with drifting smoke or applied fertilizers, herbicides, and pesticides. Moderate potential for dust and emissions from construction equipment.

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Table 2-3. Predicted Performance Summary

Decision Factor	Alternative 1: No Action	Alternative 2: Base Response Emphasis	Alternative 3: Aquatic Habitat Objectives Emphasis	Alternative 4: Cost and Administrative Efficiency Emphasis	Alternative 5: General Environmental Protection (Environmentally preferred)	Alternative 6: Balanced Approach (BPA-preferred)
<b>Achievement of Aquatic Habitat Objectives</b>	Meets objectives, but without benefit of consistent management direction.	Meets only minimum objectives with minimal consistent management direction.	Greatest predicted achievement of aquatic habitat objectives among alternatives.	Meets only the minimum objectives.	Potentially reduced achievement of objectives, as some funds are directed towards protection or improvement of non-fisheries resources.	Meets objectives.
<b>Cost and Administrative Efficiency</b>	Inefficient because BPA would need to repeatedly address common issues for every project.	Provides efficient process for implementation, but requires that many issues be addressed on a case-by-case basis.	Highest predicted costs because of the focus on best achieving aquatic habitat objectives with minimal regard to costs.	Lowest predicted costs.	Potentially high costs because funds would be directed to general environmental protection. Provides opportunity for shared efforts among agencies and other land managers that could increase efficiency of inter-related projects and/or programs.	Provides efficient process for implementation, but requires some additional costs for general environmental protection.
<b>Compliance with Laws and Regulations</b>	In compliance.	In compliance.	In compliance.	In compliance.	In compliance, with additional assurances for documentation of compliance. May be inconsistent with agency statutory authorities.	In compliance.
<b>General Environmental Protection</b>	Protects the environment through requirements set forth in individual EISs or EAs prepared for each project.	Ensures only the minimum level of environmental protection required by law.	Ensures only the minimum level of environmental protection required by law.	Ensures only the minimum level of environmental protection required by law.	Provides the maximum protection and improvement of environmental resources, consistent with achievement of aquatic habitat objectives.	Provides general environmental protection, consistent with achievement of cost efficiency, aquatic habitat objectives, and legal compliance.

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