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Report to Congressional Requesters

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ECOSYSTEM PLANNING

Northwest Forest and Interior Columbia River Basin Plans Demonstrate Improvements in Land-Use Planning

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Resources, Community, and
Economic Development Division

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May 26, 1999

The Honorable Frank Murkowski
Chairman, Committee on Energy
and Natural Resources
United States Senate

The Honorable Don Young
Chairman, Committee on Resources
House of Representatives

The Honorable Larry Combest
Chairman, Committee on Agriculture
House of Representatives

The decision-making process used by the Department of Agriculture's Forest Service in carrying out its mission is costly and time-consuming, and the agency has often failed to achieve its planned objectives.[1] Inefficiency and waste within the process have already cost taxpayers hundreds of millions of dollars.[2] Difficulties in addressing ecological issues that transcend the Forest Service's administrative boundaries and jurisdiction have contributed to the inefficiency in developing, and ineffectiveness in implementing, forest as well as other federal land management plans.[3]

Traditionally, the Forest Service, the Department of the Interior's Bureau of Land management (BLM), and other federal land management agencies developed plans to manage federal resources independently and focused mainly on the resources within the administrative boundaries of individual national forests, parks, and other federal land management units. These planning efforts often failed to adequately consider ecological issues that transcend administrative boundaries—such as issues concerning watersheds[4] or the habitats of wide-ranging species, including migratory

[1]Forest Service Decision-Making: A Framework for Improving Performance (GAO/RCED-97-71, Apr. 29, 1997) and Tongass National Forest: Lack of Accountability for Time and Costs Has Delayed Forest Plan Revision (GAO/T-RCED-97-153, Apr. 29, 1997).

[2]See, for example, Forest Service: Lack of Financial and Performance Accountability Has Resulted in Inefficiency and Waste (GAO/T-RCED/AIMD-98-135, Mar. 26, 1998).

[3]Forest Service Decision-Making: A Framework for Improving Performance (GAO/RCED-97-71, Apr. 29, 1997).

[4]A watershed is an area of land in which all surface water drains to a common point. A watershed can range from less than 100 acres drained by a single stream to many thousands of acres drained by hundreds of smaller streams that ultimately form one stream or river.

birds, bear, and salmon. The agencies' past planning efforts also suffered from other long-standing deficiencies, including (1) inadequate involvement by other federal agencies and the public, (2) a lack of comparable environmental and socioeconomic data, (3) inadequate monitoring to determine the effects of past management decisions, and (4) a lack of accountability for time and costs.

In the early 1990s, the Forest Service and BLM both announced that they would adopt a management approach that focuses on ecosystems. We have reported on ecosystem management as an approach and have concluded that specific steps are necessary for its successful implementation. These include (1) delineating ecosystems, (2) understanding the ecology of ecosystems, (3) making management choices, and (4) adapting management to new information.

Recently, the Forest Service and BLM have begun testing the efficiency and effectiveness of using broad-scoped, ecosystem-based studies to analyze ecological issues that transcend their jurisdictions and to collaborate on plans for federal land management units throughout large ecological regions defined by geophysical features, such as watersheds, or the habitats of wide-ranging species, such as the northern spotted owl. Two of the largest of the agencies' ecosystem-based studies—a July 1993 plan,[5] the Northwest Forest Plan (see app. I), and an ongoing planning effort, the Interior Columbia Basin Ecosystem Management Project (see app. II)—are intended to provide direction for managing about 90 million acres of federal land in all or parts of eight northwestern states.

Concerned about the potential costs, timeliness, and effectiveness of broad-scoped, ecosystem-based studies, you asked us to examine the two planning efforts. In this report, we discuss (1) the extent to which each effort has addressed long-standing planning deficiencies, (2) whether the agencies encountered the delays and significant costs that have been characteristic of previous planning efforts, and (3) the effect that the plans have had, or are expected to have, on the quantity and quality of timber sold from federal lands covered by the plans.

Results in Brief

Both the process used to develop and implement the Northwest Forest Plan and the process being used to develop a plan to manage federal lands in the interior Columbia River basin address many of the long-standing

[5]W. Clinton and A. Gore, Jr., The Forest Plan for a Sustainable Economy and a Sustainable Environment (July 1, 1993).

planning deficiencies that have contributed to delays, increased costs, and unmet objectives in other land management plans. For example, (1) federal interagency coordination has improved; (2) opportunities for public involvement have improved; (3) scientific assessments and analyses have generated better environmental and socioeconomic data for more informed management decisions, and (4) processes have been or will be established to monitor the effects of decisions and adapt management to new information.

The Forest Service and BLM completed the Northwest Forest Plan expeditiously and at a relatively low cost, while the interior Columbia River basin plan has taken much longer and cost much more than originally expected and has not yet been approved. The Northwest Forest Plan was developed in 1 year at a cost of about $3.5 million. This was a timely and cost-effective effort compared with past national forest planning efforts that took from 3 to 10 years to complete and, in the Pacific Northwest, cost between $5 million and $8 million even though they covered much smaller areas. The timeliness of the plan was, in part, a function of the fact that the agencies had been gathering data on the old-growth forest habitat of the northern spotted owl for many years. In addition, the federal court injunctions on timber sales created a sense of urgency and focus. The result was a plan that provides the agencies' field managers with direction for implementation and sets standards for holding them accountable. Although the agencies' 5-year effort to develop a plan for the interior Columbia River basin has overcome some long-standing deficiencies, it has not yet led to a final plan. The ongoing project has already taken 2-1/2 years longer and, at $41 million, cost $10 million more than anticipated. Some of the delays and higher costs to date have occurred because the agencies underestimated the time and effort required to address the ecological diversity and broad array of land management issues that exist in the interior Columbia River basin. Additional delays and costs are being incurred because the agencies are developing one or more new management alternatives in response to public and congressional criticism of their originally proposed draft management alternatives—including their preferred alternative. We also believe that their originally proposed alternatives did not give adequate information to stakeholders on how and with what effect the alternatives would be implemented.

Timber harvests have declined significantly since the 1980s and will likely remain at current levels under the Northwest Forest Plan. Existing laws, including the Endangered Species Act, and their implementing regulations

and judicial interpretations, have resulted in less federal land being available for timber production and less timber being produced from the land that is available. Moreover, the Forest Service and BLM overestimated the volume of timber to be harvested under their original preferred management alternative for federal lands in the interior Columbia River basin. As a result, the agencies created unrealistic expectations for relatively high timber harvests that would probably not have occurred, largely because of regulatory agencies' concerns over the impact of harvests on natural resources and shortfalls in funding to implement the plan.

Background

The federal government owns about 30 percent (650 million acres) of the nation's total surface area. Together, the Forest Service and BLM manage about 70 percent of all federal lands. The Forest Service manages about 192 million acres of land, including about one-fifth of the nation's forestlands, through three levels of field management—9 regional offices, 123 forest offices, and about 600 district offices. Laws guiding the management of the national forests require the agency to manage its lands under the principles of multiple use and sustained yield to meet the diverse needs of the American people. Under the multiple-use principle, the agency is required to plan for six renewable surface uses—outdoor recreation, rangeland, timber, watersheds and water flows, wilderness, and wildlife and fish. Under the sustained-yield principle, the agency is required to manage its lands to provide high levels of all of these uses to current users while sustaining undiminished the lands' ability to produce these uses for future generations. In addition, the Forest Service is required by its guidance and regulations to consider the production of nonrenewable subsurface resources—such as oil, gas, and hardrock minerals[6]—in its planning.

BLM manages almost 264 million acres of land, including about 177 million acres located mainly in the western United States and about 87 million acres in Alaska, through three levels of field management—12 state offices that oversee district and resource area offices.[7] BLM also manages the mineral estate that underlies almost 300 million acres managed by other agencies, including the Forest Service. The Federal Land Policy and Management Act of 1976 requires the agency to manage its lands for multiple uses and sustained yield. Under the act, multiple uses include

[6]Hardrock minerals include gold, silver, lead, iron, and copper.

[7]During 1999, BLM is planning to streamline its organizational structure by combining its district and resource area offices into field offices.

recreation; range; timber; minerals; watersheds; fish and wildlife; and natural scenic, scientific, and historic values.

The Forest Service and BLM must comply with the requirements of the National Environmental Policy Act of 1969. This act and its implementing regulations specify the procedures for integrating environmental considerations through environmental analyses and for incorporating public input into the agencies' decision-making processes. The act requires that a federal agency prepare a detailed environmental impact statement for every major federal action that may significantly affect the quality of the human environment. Environmental impact statements are designed to ensure that important effects on the environment will not be overlooked or understated before the government makes a commitment to a proposed action.

In developing plans and making decisions to implement projects,[8] the Forest Service and BLM must also comply with the requirements of other environmental statutes, including the Endangered Species Act, the Clean Water Act, the Clean Air Act, the Wilderness Act, and the Migratory Bird Treaty Act, as well as other laws, such as the National Historic Preservation Act. In particular, section 7 of the Endangered Species Act generally prohibits federal agencies from taking actions in pursuit of their primary missions, such as timber production, if those actions would put threatened or endangered species at risk. When proposing a project, a federal agency is prohibited from taking an action that would jeopardize the existence of threatened or endangered species or adversely modify designated critical habitat.

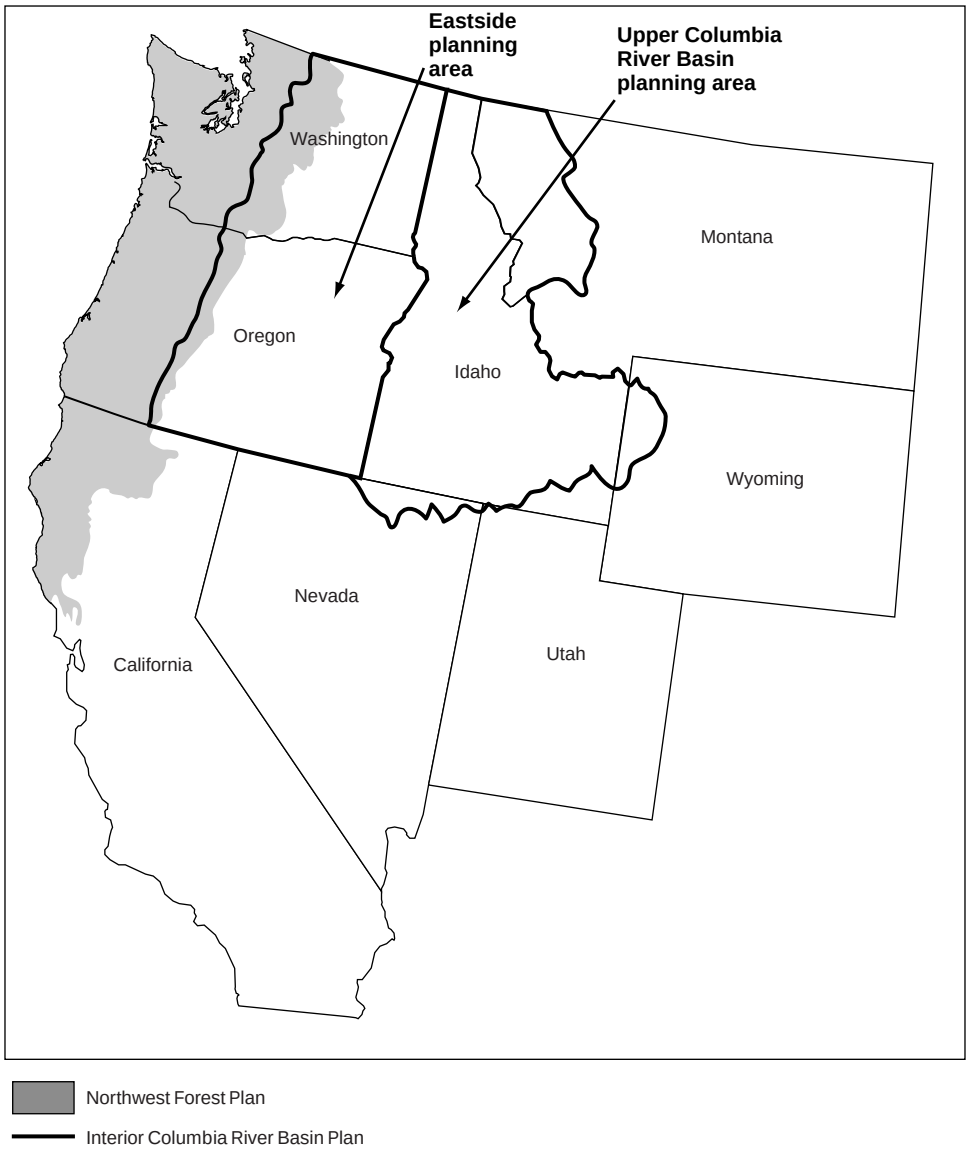
Several federal regulatory agencies are responsible for enforcing environmental laws and regulations. For example, the Department of the Interior's Fish and Wildlife Service and the Department of Commerce's National Marine Fisheries Service share responsibility for ensuring the protection and recovery of plant and animal species listed as threatened or endangered under the Endangered Species Act. The Environmental Protection Agency has authorities and responsibilities to implement major environmental statutes, including those to protect and enhance air quality (the Clean Air Act) and to restore and maintain the chemical, physical, and biological integrity of the nation's waters (the Clean Water Act).

[8]Projects are on-the-ground activities, such as harvesting timber, restoring species' habitats, and constructing campsites.

In April and July 1993, the President directed the development of what would become, respectively, the Northwest Forest Plan and the Interior Columbia Basin Ecosystem Management Project. The Northwest Forest Plan was developed in response to court injunctions that barred the Forest Service and BLM from selling timber harvested in the range of the northern spotted owl, which was listed as a threatened species in 1990. The Northwest Forest Plan includes two components that focus on forest management and economic development. The first component includes a regional land management plan that provides management direction for the 22.3 million acres of land managed by the Forest Service and BLM in the range of the northern spotted owl. (See fig. 1.) The land management plan's development began with a scientific assessment by six federal agencies that described current and desired ecological conditions within the owl's range.[9] The plan was completed when the Secretaries of Agriculture and the Interior approved it in April 1994. The plan is currently being implemented. The second component of the Northwest Forest Plan, an economic assistance program aimed at helping the region adjust to changes in federal forest management, is not discussed in this report.

[9]The six federal agencies were the Forest Service, BLM, the Fish and Wildlife Service, the National Park Service, the National Marine Fisheries Service, and the Environmental Protection Agency.

Figure 1: The Geographical Boundaries of the Northwest Forest Plan and of the Interior Columbia Basin Ecosystem Management Project



Sources: Forest Service and BLM.

In July 1993, the President also directed the Forest Service to develop a regional land management plan for national forests in Oregon and

Washington east of the crest of the Cascade Mountains. The plan is being developed to avoid conflicts of the sort that prompted the Northwest Forest Plan. In January 1994, the Forest Service and BLM agreed to expand the scope of the plan to include all lands managed by BLM in eastern Oregon and Washington. (See the Eastside Planning area in fig. 1.) In July 1994, the two agencies further expanded the project to include their lands in much of Idaho, western Montana, and small portions of Nevada, Wyoming, and Utah. (See the Upper Columbia River Basin planning area in fig. 1.) The total planning effort encompasses about 72 million acres of federal land and is known as the Interior Columbia Basin Ecosystem Management Project. In June 1997, the agencies released a set of draft management alternatives, including their preferred alternative, for public comment. In October 1998, responding to congressional and public criticisms, the Secretaries of Agriculture and the Interior announced their decision to develop one or more new draft alternatives.

The Forest Service and BLM Have Addressed Many Long-Standing Planning Deficiencies

During the past 5 fiscal years, we have issued reports identifying long-standing deficiencies in federal land management decision-making generally and in the Forest Service's decision-making particularly.[10] These deficiencies include a lack of (1) adequate involvement in the decision-making process by other federal agencies and the public, (2) comparable environmental and socioeconomic data among agencies, and (3) monitoring to determine the effects of past management decisions. These deficiencies have increased, and could continue to increase, the time and costs needed for any federal land management agency to reach a decision at any organizational level. The processes used to develop and implement the Northwest Forest Plan and to develop a plan for managing federal lands in the interior Columbia River basin address these deficiencies.

Interagency Coordination Has Improved

Involving federal regulatory agencies, such as the Fish and Wildlife Service, the National Marine Fisheries Service, and the Environmental Protection Agency, at the beginning of the planning process and maintaining their involvement throughout the process can expedite decision-making. However, federal land management agencies have not

[10]Forest Service Decision-Making: A Framework for Improving Performance (GAO/RCED-97-71, Apr. 29, 1997); Tongass National Forest: Lack of Accountability for Time and Costs Has Delayed Forest Plan Revision (GAO/T-RCED-97-153, Apr. 29, 1997); Forest Service: Lack of Financial and Performance Accountability Has Resulted in Inefficiency and Waste (GAO/T-RCED/AIMD-98-135, Mar. 26, 1998); and Ecosystem Management: Additional Actions Needed to Adequately Test a Promising Approach (GAO/RCED-94-111, Aug. 16, 1994).

always sought the regulatory agencies' early involvement. For example, before the Northwest Forest Plan was developed, a lack of coordination among federal agencies was identified as a major cause of the impasse that existed in the region.

In developing and implementing the Northwest Forest Plan, federal agencies have worked together to improve coordination and communication with positive results. For instance, according to agency officials, the time and resources required for federal land management agencies to consult with federal regulatory agencies as required under the Endangered Species Act has generally declined. However, agency officials believe additional improvements are warranted.

The development of a plan to manage federal lands in the interior Columbia River basin has been an interdisciplinary and interagency effort from the beginning. While the Forest Service and BLM have led the effort, other federal agencies have provided both staff and funding to support the project.

Opportunities for Public Participation Have Improved

The public has expressed its desire to become more involved in federal land management decision-making and has demonstrated its preference for presenting its concerns, positions, and supporting documentation during, rather than after, an agency's development of proposed plans. It has also signaled its intent to challenge through administrative appeals and lawsuits decisions that it has not been involved in reaching. The Forest Service has often not, however, adequately involved the public throughout the decision-making process, and efforts to address ecosystem issues and concerns have occasionally excluded key nonfederal landowners.[11]

Because the court injunctions that had enjoined the Forest Service and BLM from selling timber until they addressed issues related to protecting the threatened northern spotted owl and its habitat necessitated quick action, the public was not involved in the scientific assessment that started the development of the Northwest Forest Plan. However, public comments were requested, and over 100,000 were received, on the draft plan. Moreover, since the plan was approved, federal agencies have shown their willingness to involve nonfederal parties in their decision-making. For example, the agencies have established advisory committees that include

[11]See, for example, Oregon Watersheds: Many Activities Contribute to Increased Turbidity During Large Storms (GAO/RCED-98-220, July 29, 1998).

the general public, local governments, and other groups. Among other things, these committees helped to determine whether agencies' activities were in compliance with the plan's requirements.

The public has had many opportunities to participate in the development of a plan to manage federal lands in the interior Columbia River basin. For example, the agencies (1) held meetings with the public in dozens of locations to identify people's concerns about federal land management; (2) held over 200 meetings, briefings, and consultations to keep the public and other interested parties informed during the development of alternatives to manage federal lands in the basin; and (3) requested, received, analyzed, and are considering comments from nearly 83,000 parties on the seven different land management alternatives included in the original draft plan issued in June 1997.

Efforts Are Under Way to Collect and Use Comparable Data

Effective interagency coordination is dependent on, among other things, comparable environmental and socioeconomic data that are useful and easily accessible to decisionmakers. However, data gathered by federal agencies are often not comparable, large gaps in the available information exist, and agencies may not know who has what information or how existing information can be made available within agencies, across agencies, and to the public. These data limitations continue to hinder the development of federal land management plans, result in legal challenges to the plans, and limit the implementation of efforts to expedite decision-making.

Since the Northwest Forest Plan was approved, federal agencies have made some progress in standardizing the data to be collected and in mapping the region on a consistent scale. In addition, the Forest Service and BLM are accumulating comparable data on, for example, forest cover and landowners' behavior, across large areas within the region and are testing the data to see if they are useful to field managers for decision-making.

The scientific assessment of ecological and socioeconomic systems and conditions in the interior Columbia River basin has contributed greatly to data comparability. For example, maps of particular variables, such as vegetation types, grizzly bear range, and household income, are stored in geographic information systems that can be retrieved not only by federal agencies but also by the public and can be used for decision-making by many levels of government.

The Plans Require, or Will Require, Regional Monitoring and Adaptive Management

Once a plan is approved, agencies must move toward monitoring its implementation to meet long-term and annual goals and objectives and to adapting the plan's management when new information becomes available. Historically, the Forest Service has failed to live up to its own monitoring requirements, particularly those for monitoring the effects of past management decisions. Not monitoring and evaluating its decisions could expose the Forest Service to further litigation.

The Northwest Forest Plan requires an extensive monitoring program. The Forest Service and BLM have completed 4 years of monitoring to determine whether the plan's requirements are being implemented, and the agencies are beginning to evaluate whether the plan is achieving its desired results.

A plan to manage federal lands in the interior Columbia River basin has not been approved. However, the agencies have acknowledged the importance of adaptive management and their original proposal identified steps for monitoring the plan's implementation.

In Contrast to the Northwest Forest Plan, the Draft Management Plan for the Interior Columbia River Basin Has Been Subject to Delays and Increased Costs

The Northwest Forest Plan was developed and approved in about 1 year, at a cost of about $3.5 million. By contrast, after spending over 5 years and about $41 million through the end of fiscal year 1998, the Forest Service and BLM have exceeded time and cost estimates but have still not made the necessary management choices and finalized a plan to manage federal lands in the interior Columbia River basin. The agencies estimate that they will need another $10.9 million to reach a decision in March 2000.

Key factors that contributed to the timely and cost-effective development of the Northwest Forest Plan included (1) the sense of urgency created by the court injunctions, (2) the strong leadership displayed by the administration in developing the plan, and (3) clear objectives focusing the effort primarily on the minimum habitat needs of the northern spotted owl and other species that depend on old-growth forests for their habitat. Moreover, the plan provides the agencies' land managers with adequate direction for implementation and sets standards for holding them accountable. For instance, federal lands in the plan area are divided into seven categories. The lands in some categories are set aside or withdrawn for specific uses, such as recreation, or reserved to protect habitat for owls and other species. The lands in other categories are available for multiple uses. The lands in each category are to be managed in accordance with requirements that include allowable and prohibited activities and other guidance. For example, timber harvesting to reduce the density of

trees is allowed on lands reserved to protect owl habitat, but generally not in stands over 80 years old.

There are two major reasons why the planning effort for the interior Columbia River basin has taken longer and cost more than anticipated. First, the agencies underestimated how much time it would take to address the multitude of ecological and socioeconomic issues in the basin—a region encompassing about 8 percent of the surface area of the United States. The ecology of the interior Columbia basin is a diverse mixture of forest and range types that support many species, produce a wide array of goods and services, and have varied requirements for restoration and conservation.

The second reason for the effort's additional time and costs is that the agencies chose to develop one or more new alternatives in response to widespread criticism of their original draft alternatives from the public and the Congress. A final decision on a plan to manage federal lands in the basin is now not expected until March 2000. The fiscal year 1999 budget for the project is $5.7 million, and the agencies estimate that they will need $5.2 million in fiscal year 2000.

While much of the criticism reflected differences in opinion over how the federal lands should be managed, some of it related to how successful the agencies were in taking the steps necessary to implement ecosystem management. One of the necessary steps is to delineate ecosystem boundaries for consistent management. Although the agencies did this when they selected the basin as their planning area, they have acknowledged that their original proposal addressed issues that are not appropriately dealt with at the scale of the basin. These include plant and animal species with limited ranges whose management requires site-specific information that cannot be provided at the scale of the basin. The agencies have pledged to focus their revision on critical broad-scale issues related to landscape health, aquatic habitats, human needs, products and services, and terrestrial habitats.

In announcing their intent to supplement their draft proposal with a new alternative or alternatives that focus on basinwide issues, the agencies made it clear that the choice of a preferred alternative or alternatives for the interior Columbia River basin project is the first in a series of decisions that will affect federal land management. It is also clear that if more issues are resolved at the basinwide scale, fewer issues will have to be resolved at smaller scales. Conversely, if more broad-scale issues are deferred, the

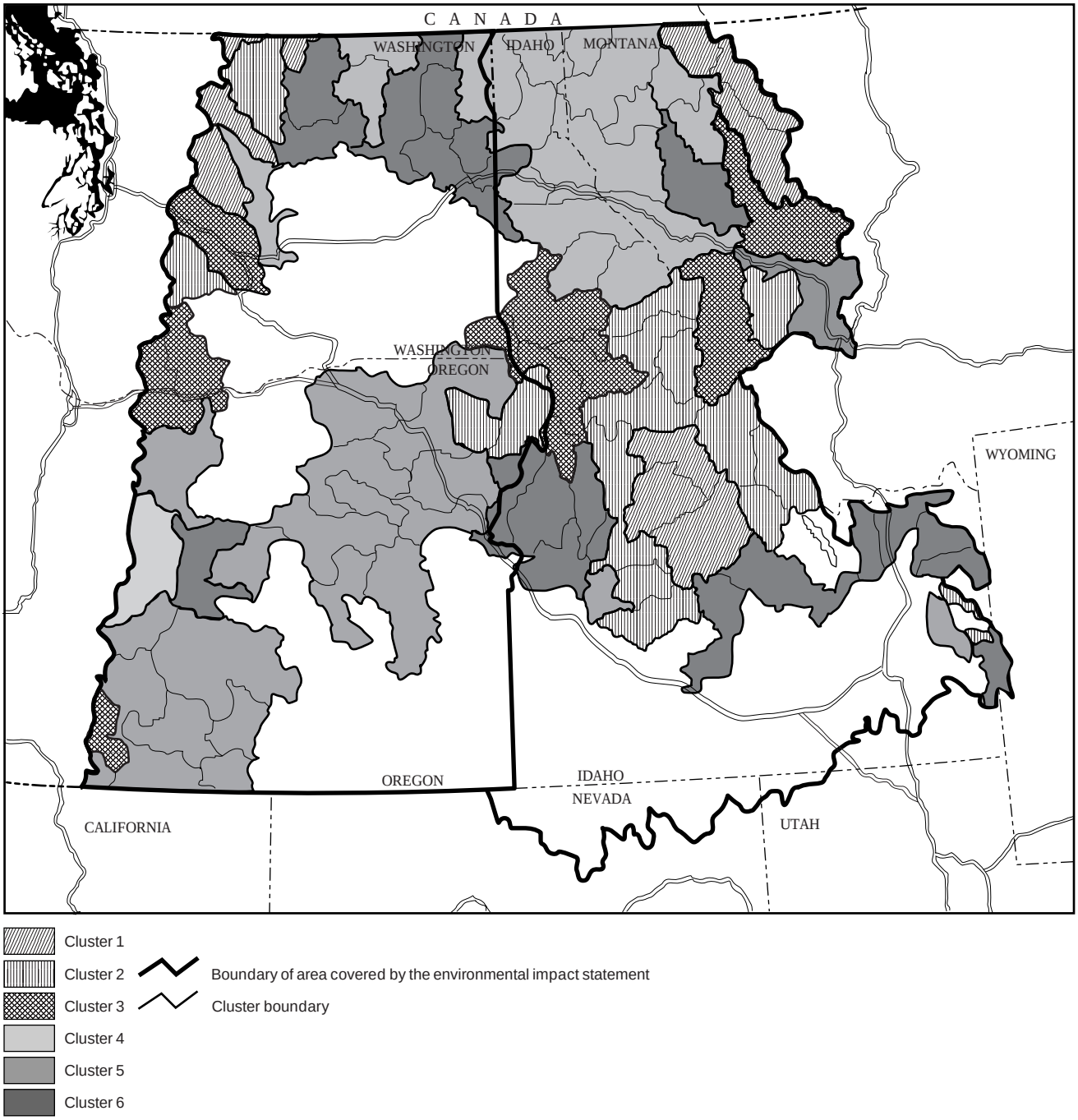
agencies will later need more planning resources and time to complete a comprehensive plan for the basin.

We believe that for the issues addressed by the draft proposal, the agencies also failed to complete one of the essential steps in ecosystem management—making management choices. In our past work, we concluded that this step includes identifying (1) desired future ecological conditions; (2) the types, levels, and mixes of activities to meet these conditions; and (3) the distribution of activities among land units over time.[12] Because the agencies did not complete this step, we believe that it is difficult to determine how and where management activities would be implemented in specific locations under the different alternatives. Stakeholders therefore, had to base their analyses of the alternatives on the intent of each alternative—such as aggressively restoring degraded lands through active management, emphasizing the production of goods and services, or promoting restoration by establishing a system of reserves where management activities are limited—rather than on specific expected results.

For example, rather than allocate the estimated potential timber harvest among administrative land units, such as national forests, as they did for the Northwest Forest Plan, the Forest Service and BLM allocated the estimated potential timber harvests and other activities to noncontiguous but ecologically similar groupings of land—called "clusters"—that are scattered throughout the basin. These clusters do not correspond to the borders of administrative land units. (Fig. 2 shows the boundaries of forest clusters in the basin.) Therefore, this approach did not indicate what level of economic activity could be expected for individual national forests or BLM management units. Hence, those economically dependent on these units, such as timber industry employees, did not have an adequate understanding of the economic impact of the different land management alternatives and could not make informed choices among them.

[12]Ecosystem Management: Additional Actions Needed to Adequately Test a Promising Approach (GAO/RCED-94-111, Aug. 16, 1994).

Figure 2: Forest Clusters in Lands Within the Boundaries of the Interior Columbia River Basin Project Area



(Figure notes on next page)

Note: The lands in the project area that are not shaded are dominated by range ecosystems rather than forests. The agencies also divided these areas into noncontiguous range clusters.

Source: Interior Columbia Basin Ecosystem Management Project.

When the agencies announced that they would prepare an additional alternative or alternatives for managing the basin and that they would improve their proposal by focusing on basinwide issues, they also indicated that the revision would provide only general guidance on some of those issues. We are concerned that general guidance will not complete the step of making management decisions and all that that step entails. General guidance alone will not provide stakeholders with the clear and well-defined management alternatives they need to make informed choices, nor will it provide the Congress and the public with the standards they need to hold federal land managers accountable.

The Quantity and Quality of Timber From Western Federal Lands Will Remain Low

The process used to develop the Northwest Forest Plan was timely and cost-effective and successfully addressed many of the long-standing deficiencies associated with federal land management planning. Moreover, the broad-scale, ecosystem-based approach used to develop the plan was sufficient for the courts to lift the injunctions related to the spotted owl controversy. The plan has not, however, reversed the sharp decline caused by the injunctions in the quantity and quality of timber sold from federal lands in the Pacific Northwest. As a result, the consequences of this decline—higher per-unit costs for agencies to provide the timber and for loggers to harvest it—have also not been reversed. Significant changes in this situation are unlikely to occur under current planning and environmental laws.

The Forest Service and BLM overestimated the volume of timber to be harvested under their original preferred management alternative for federal lands in the interior Columbia River basin. As a result, the agencies created unrealistic expectations for relatively high timber harvests that would probably not have occurred, largely because of regulatory agencies' concerns and shortfalls in funding to implement the plan.

The Northwest Forest Plan Calls for Significantly Lower Timber Sales

The volume of timber sold from federal lands covered by the Northwest Forest Plan declined from a yearly average of about 5.0 billion board feet[13] in the 1980s to a low of 297 million board feet in 1994 following the injunctions barring federal timber sales in northern spotted owl habitat. (See app. I, fig. I.3.) After the plan was approved, the injunctions were lifted, but timber sales were not substantially increased. In the first 4 full fiscal years of the plan, sales averaged about 687 million board feet per year, largely because of restrictions imposed by the plan on how and where timber can be commercially harvested. This level of sales is roughly consistent with the plan's projections for the first 4 years of implementation.

The quality of the timber sold from the plan area has also declined, in part because of the plan's restrictions on the location and age of trees that can be harvested. For example, the plan restricts the harvest of older trees to protect the habitat of the northern spotted owl and other species. Older trees are commercially valuable because they yield relatively higher-grade timber that can be manufactured into a broad array of wood products, including lumber. As a result of the plan's restrictions, the proportion of this high-grade timber harvested from national forests in the plan area has decreased from an average of about 86 percent during the 1980s to an average of less than 75 percent during fiscal years 1995 through 1998. (See app. I, fig. I.4.)

As the quantity and quality of timber have declined, the per-unit costs to the federal government and logging companies have increased dramatically. For example, the Forest Service's per-unit costs of operating the timber program almost doubled from $126 per thousand board feet in fiscal year 1992 to $243 per thousand board feet in fiscal year 1997. (See app. I, fig. I.6.) This increase is largely attributable to the proportionally higher fixed costs, such as expenses associated with depreciation on existing facilities and roads, and inefficiencies inherent in smaller harvests. The agencies have also significantly reduced the use of clear-cutting—the removal of all trees from a timber-harvesting site at one time—as the preferred harvesting method. The substitution of more environmentally sensitive, but costlier harvesting methods has almost doubled the per-unit costs to private companies of logging on federal lands in the Pacific Northwest. (See app. I, fig. I.7.)

[13]A board foot is a measure of wood volume equal to an unfinished board 1 foot long, 1 foot wide, and 1 inch thick. Different methods for estimating board feet yield different estimates. To account for these differences, we have converted all board feet volumes into a standard measure using the method of estimation employed by the Forest Service's Northwest Region.

Timber Sales Are Unlikely to Substantially Increase Over Current Levels

The overall decline in the quantity and quality of timber from federal lands covered by the Northwest Forest Plan is unlikely to be reversed, given existing laws, including the Endangered Species Act, and their implementing regulations and judicial interpretations. Restrictions imposed by the plan to comply with these laws resulted in the injunctions being lifted but also resulted in lower timber sales relative to the 1980s. The plan initially projected that the agencies would be able to sell an average of about 958 million board feet per year during the plan's first decade. While this level represents a decline of more than 80 percent from sale levels during the 1980s, subsequent analyses of the ecological conditions of the land by the Forest Service and BLM reduced the annual projected sale volume to 840 million board feet for the first decade. Since then, the Forest Service has announced that it will further reduce its portion of the projected sale volume—thereby reducing the total for the plan area. According to the Forest Service, the new projected sale volume will most likely be 746 million board feet per year.

Although an annual timber sale level of 746 million board feet is more than double the lowest level reached as a result of the federal court injunctions, it is just a small fraction of the sale levels experienced during the 1980s. (See app. I, fig. I.3.) Timber sales reached their lowest level as a result of the injunctions in fiscal year 1994, when the agencies sold about 300 million board feet, or about 6 percent of the 5.0 billion board feet sold, on average, each year during the 1980s. In comparison, the average annual sale level of 746 million board feet projected by the Forest Service under the plan equals about 15 percent of the average level sold during the 1980s. Thus, there is less than a 9-percent difference between the predicted annual sale level under the plan and the lowest level sold under the injunctions when compared with the average level of timber sold during the 1980s.

Furthermore, although the agencies do not believe timber sales will fall below the projected annual average of 746 million board feet, they are unlikely to increase. Since the plan was approved in 1994, 18 additional species have been listed under the Endangered Species Act as endangered or threatened in the area covered by the plan. In addition, recent policy initiatives mean that federal lands are more likely to assume additional responsibility for protecting threatened and endangered species. For example, in exchange for commitments by nonfederal land owners to protect threatened and endangered species, the Fish and Wildlife Service and the National Marine Fisheries Service agreed that if measures beyond

those in the commitment were needed, they would be implemented first on federal lands.

The Forest Service and BLM Have Overestimated the Volume of Timber to Be Harvested in the Interior Columbia River Basin

The volume of timber harvested from federal lands in the interior Columbia River basin declined from a peak of 3.3 billion board feet in fiscal year 1987 to about 900 million board feet in fiscal year 1997. According to the Forest Service and BLM, their preferred management alternative in the original draft plan would have reversed this trend and led to average yearly harvests of about 1.7 billion board feet, thus providing economic support for local communities. However, our review indicated that for this plan, as for the Northwest Forest Plan, the agencies overestimated the volume of timber to be harvested under the preferred management alternative.

In estimating the volume of timber to be harvested under this alternative, the Forest Service and BLM did not adequately take into account the concerns of federal regulatory agencies, budgetary constraints, and the potential impact of new information and events. For this, as for other planning efforts, the Fish and Wildlife Service, the National Marine Fisheries Service, and the Environmental Protection Agency expressed concern that the original preferred alternative's emphasis on active management, including timber harvesting, would cause unacceptable environmental consequences. In addition, as the Forest Service did in developing some of the first forest plans, the two agencies developed the plan's management alternatives without reference to likely funding levels. The agencies' preferred alternative and estimate of timber output assumed a significant increase in appropriated funds, which the agencies are not likely to receive. Finally, new information and events, similar to those likely to affect timber sales in the Pacific Northwest, could further reduce timber sales. For instance, additional species could be listed; federal lands in the basin could assume more responsibility for protecting wildlife and fish and their habitats; additional federal lands could be set aside for conservation; and the results of additional analyses could limit the acreage available for multiple uses, including timber harvesting. For all of these reasons, the volume of federal timber available for sale is likely to be smaller than estimated under the agencies' preferred management alternative.

Conclusions

The Northwest Forest Plan is one of the first broad-scoped, ecosystem-based plans to be developed and implemented. Experience

with it has shown that an ecological approach to planning, coupled with urgency, strong leadership, and clear objectives, can address many of the long-standing deficiencies associated with planning for and managing federal lands. The plan was developed in a timely and cost-effective manner compared to other Forest Service planning efforts, and it contains direction to be implemented by line managers. In addition, processes were established to, among other things, (1) involve federal regulatory agencies and the public in land management decision-making, (2) monitor the effects of management decisions, (3) collect and use comparable environmental data, and (4) adapt management to new information obtained through monitoring and research.

However, the Northwest Forest Plan's implementation has also shown that correcting long-standing management deficiencies will not necessarily lead to increases in the volume or quality of timber produced. Requirements in federal land planning and environmental laws and their judicial interpretations have sharply reduced federal timber sales from their average level during the 1980s and are likely to keep them at about the current level. These requirements have also reduced the quality of the federal timber available for sale and have increased the costs for federal agencies to operate the timber program and for private companies to harvest the timber.

In developing a plan to manage federal lands in the interior Columbia River basin, the Forest Service and BLM have also worked to overcome some long-standing planning deficiencies. However, without the sense of urgency that focused efforts to develop the Northwest Forest Plan, they have not demonstrated the discipline and accountability for time and costs needed to produce a timely decision on the management of a large and complex region. Nor have the agencies focused their plan on those issues that should be addressed at such a large scale. Finally, the agencies have not provided enough detail about the possible outcomes of alternatives.

Ultimately, the Forest Service, BLM, the Congress, and other interested parties must make some difficult decisions about managing federal lands in the interior Columbia River basin. To do this, the agencies will need to determine what issues are appropriately addressed in the interior Columbia River basin plan and what issues are appropriately addressed at smaller geographic scales. To complete the interior Columbia River basin plan, the agencies will then need to (1) decide what steps land managers must take to reach clearly defined objectives that they can be held accountable for accomplishing, (2) determine how the distribution of

management activities over time among the various federal land units, including those activities that produce goods and services such as timber, will be affected by basinwide management decisions, and (3) ensure that basinwide management decisions and estimates of outputs such as timber fully take into account environmental laws and regulations, budgetary constraints, and other variables.

Recommendations to the Secretaries of Agriculture and the Interior

We recommend that the Secretaries of Agriculture and the Interior provide additional direction to the interagency team responsible for developing the plan for managing federal lands in the interior Columbia River basin. Specifically, the Secretaries should direct that in revising the draft plan to focus on those issues that are appropriately addressed basinwide, the team should, (1) identify the ecological and socioeconomic trade-offs among the different land management alternatives proposed to address basinwide issues, including the likely effects of those alternatives on ouputs such as timber across federal land units within the basin; (2) provide land managers with clear direction for implementation along with performance standards for holding them accountable; and (3) make basinwide management decisions and estimates for outputs such as timber taking full account of existing environmental laws and regulations, budgetary constraints, and other variables.

Given that the agencies intend the interior Columbia River basin plan to make management decisions for a limited number of basinwide issues and that additional management plans focused on smaller geographic scales will therefore be needed to provide additional management direction, we also recommend that the Secretaries direct the the interagency team to prepare for the Congress and the public details on how the additional plans will be integrated with the interior Columbia River basin plan and to estimate the time and resources that will be needed.

Agency Comments

We provided copies of a draft of this report to the Forest Service, BLM, the Northwest Forest Plan's Regional Interagency Executive Committee, and the Interior Columbia Basin Ecosystem Management Project Executive Steering Committee for review and comment. Because the two ecosystem management plans are interagency efforts, the Regional Interagency Executive Committee and the Executive Steering Committee provided comments with the concurrence of the Forest Service and BLM.

For those sections of the report dealing with the Northwest Forest Plan, the Regional Interagency Executive Committee generally agreed with our findings and conclusions. However, in its comments, the Committee emphasized a point that merits further discussion and analysis. The Committee commented that our emphasis on the timber program should be matched with an equal emphasis on other components of the plan, such as interagency cooperation and the strategy intended to restore and maintain the ecological health of watersheds. We discussed in detail many aspects of the Northwest Forest Plan, including its correction of long-standing management deficiencies that we previously identified, such as a lack of interagency cooperation. However, many of the intended benefits of the plan—especially those associated with the long-term and overall health of federal lands and resources—will not be realized for many years, and accurate measures to gauge longer-term improvements have yet to be developed. Therefore, we did not make any changes to the report.

The Committee's comments and our responses to them are found in appendix III of this report. The Committee also provided several clarifications to the report, which we incorporated where appropriate.

For those sections of the report dealing with the Interior Columbia Basin Ecosystem Management Project, the Executive Steering Committee generally agreed with our findings and recommendations. However, in its comments, the Committee emphasized several points. First, the Committee said that we did not adequately present differences in the scope and approaches of the interior Columbia River basin project and the Northwest Forest Plan that contributed to the relative differences in the time and costs to develop them. We agree that these differences are important, and we revised the draft to highlight them. More importantly, it was not our intent to compare the costs of the interior Columbia River basin project and of the Northwest Forest Plan, but to compare the actual time and costs of the project to initial estimates made by the agencies. Second, the Committee provided us with a time line for completing the project. As a result, we updated the report and deleted the first part of our draft recommendation that the agencies develop a time line for completing the project. Third, with respect to our recommendation that the agencies identify trade-offs between management alternatives, the Committee emphasized that there are limits to how specific they can be about the effects of management decisions at the basinwide scale. We acknowledge these limits and revised our recommendation to emphasize that it applies only to those issues that the agencies determine should be addressed at

the basinwide scale. Fourth, the Committee said that the supplemental draft environmental impact statement would address our draft recommendation that the agencies clearly state the impact of environmental laws, regulations, budgetary constraints, and other variables on timber sales volumes. However, because actions related to this recommendation are not yet complete, we did not make any changes to it.

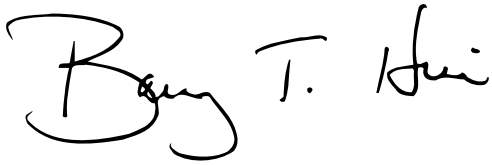
We added our second recommendation on the time and resources needed to complete the planning process for federal lands in the basin after the agencies reviewed our draft report. We believe that the recommendation is warranted, given the limits on a basinwide decision and the need for additional decisions at a smaller scale.

The Committee's other comments and our responses to them are found in appendix IV of this report. The Committee also provided several clarifications to the report, which we incorporated where appropriate.

We conducted our work from September 1997 through March 1999 in accordance with generally accepted government auditing standards. Appendix V explains our methodology in detail.

We are sending copies of this report to Senator Bingaman, Ranking Minority Member, Senate Committee on Energy and Natural Resources; Representative George Miller, Ranking Minority Member, House Committee on Resources; and Representative Charles Stenholm, Ranking Minority Member, House Committee on Agriculture. We are also sending copies of this report to the Honorable Dan Glickman, Secretary of Agriculture; the Honorable Bruce Babbitt, Secretary of the Interior; the Honorable Mike Dombeck, Chief of the Forest Service; the Honorable Tom Fry, Acting Director of the Bureau of Land Management; and other interested parties. We will make copies available to others on request.

If you or your staff have any questions about this report, please call me at (202) 512-3841. Major contributors to this report are listed in appendix VI.



Barry T. Hill
Associate Director, Energy,
Resources, and Science Issues

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Abbreviations

BLM	Bureau of Land Management
GAO	General Accounting Office

Implementation of the Northwest Forest Plan Addresses Many Long-Standing Deficiencies but Cannot Provide Historic Levels of Timber

Experience with the Northwest Forest Plan[14] has shown that an ecological approach to planning, coupled with a sense of urgency, strong leadership, and clear objectives, can address many of the long-standing deficiencies we have found associated with planning for and managing federal lands. Compared to other Forest Service plans, this one was developed expeditiously and cost-effectively—it took about a year and cost about $3.5 million—and contains clear direction to field managers. In addition, processes were established to, among other things, (1) involve federal regulatory agencies and the public in land management decision-making, (2) collect and use comparable environmental data, and (3) adapt management to new information obtained through monitoring and research.

The Northwest Forest Plan satisfied the courts so that they were willing to lift the injunctions that had barred the Forest Service and BLM from selling timber in northern spotted owl habitat. However, the plan called for an 81-percent reduction in the volume of timber sold, compared with the volume sold in the 1980s, and the agencies have subsequently reduced this estimate. Additionally, the quality of the timber sold relative to what was sold in the 1980s has declined, and the agencies' costs of providing timber and loggers' costs of harvesting it have increased significantly on a per-unit basis.[15] Moreover, the overall decline in the volume and quality of timber sold from federal lands in the Pacific Northwest is unlikely to be reversed, given existing laws, including the Endangered Species Act, and their implementing regulations and judicial interpretations. As a result, the increases in the agencies' and loggers' per-unit costs that were linked to this decline will also not be reversed.

[14]We use the term "Northwest Forest Plan" to include a group of documents that led to a formal interagency plan to manage federal lands in the Pacific Northwest.

[15]Costs are measured in dollars per board foot. A board foot is a measure of wood volume equal to an unfinished board 1 foot long, 1 foot wide, and 1 inch thick.

The Northwest Forest Plan Was Developed to Resolve a Conflict Between Consumption and Conservation

In the late 1980s and early 1990s, timber sales on lands in northern spotted owl habitat managed by the Forest Service and BLM in the Pacific Northwest were brought to a virtual halt by federal court injunctions. In various rulings, the federal courts enjoined the agencies from selling timber until they addressed issues related to protecting the habitat of this owl,[16] which was listed as threatened under the Endangered Species Act. In response, the President directed his administration to develop a plan that would (1) satisfy the courts so they would lift the injunctions, (2) protect the environment, and (3) help stabilize the regional economy. The result was the Northwest Forest Plan.

The Northwest Forest Plan includes two components that focus on forest management and economic development. The first component includes a regional land management plan that provides management direction for the 22.3 million acres of land managed by the Forest Service and BLM in the range of the northern spotted owl.[17] The regional plan's development began with a scientific assessment by six federal agencies that described current and desired ecological conditions within the owl's range.[18] The assessment also included 10 alternatives for managing the federal lands. Each alternative depicted a different mix of management guidance to protect habitat for owls and other species while also providing for other uses of the forests, including timber harvesting. The potential environmental and economic effects of each alternative were examined and compared in a draft supplemental environmental impact statement,[19] and a preferred alternative was chosen by the President for further examination in a final supplemental environmental impact statement.[20] A

[16]See, for example, Seattle Audubon Society v. Evans, 771 F. Supp. 1081 (W.D. Wash.), aff'd, 952 F.2d 297 (9th Cir. 1991) and Seattle Audubon Society v. Moseley, 798 F. Supp. 1484 (W.D. Wash. 1992), aff'd sub nom., Seattle Audubon Society v. Espy, 998 F.2d 699 (9th Cir. 1993).

[17]An additional 2.2 million acres of federal land within the range of the northern spotted owl are managed primarily by the National Park Service and are not subject to the management direction of the Northwest Forest Plan.

[18]Forest Ecosystem Management: An Ecological, Economic, and Social Assessment, Report of the Forest Ecosystem Management Assessment Team (FEMAT)(July 1993). The six federal agencies were the Forest Service, BLM, the Fish and Wildlife Service, the National Park Service, the National Marine Fisheries Service, and the Environmental Protection Agency.

[19]Draft Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl, Forest Service and BLM (July 1993).

[20]Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl, Vols. I and II, Forest Service and BLM (Feb. 1994).

record of decision,[21] signed by the Secretaries of Agriculture and the Interior in April 1994, selected one land management option and amended the land management plans for 19 national forests and 7 BLM districts in the Pacific Northwest[22] on the basis of the option.

The land management plan allocated federal lands into seven categories, including lands set aside by the agencies or withdrawn by the Congress for specific uses, such as recreation and wilderness; lands reserved to protect habitat for owls and other species; and "matrix lands" (those available for multiple uses, including timber harvesting). Lands in each category are to be managed in accordance with requirements (standards and guidelines) established by the record of decision. These include allowable and prohibited activities and other guidance. For example, timber harvesting to reduce the density of trees is allowed on lands reserved to protect owl habitat, but generally not in stands over 80 years old. Of the 24.5 million acres of land covered by the Northwest Forest Plan, 78 percent were either set aside for specific uses, such as recreation, or reserved to protect habitat for owls and other species. The remaining 22 percent were available for multiple uses, including timber harvesting.

In addition, the regional plan recognizes that a one-size-fits-all approach may not be appropriate and allows for the requirements to be tailored to fit the ecological conditions specific to each of 12 geographic provinces (e.g., old-growth rain forests in western Washington and drier forests in northern California). The plan also includes an aquatic conservation strategy intended to restore and maintain the ecological health of watersheds and the aquatic ecosystems within them. The strategy, among other things, requires the Forest Service and BLM to (1) analyze conditions in watersheds identified as key to protecting fish at risk of becoming extinct and to providing high-quality water before beginning management activities, such as timber harvesting, on either reserved or matrix lands and (2) eventually conduct an analysis of conditions in all watersheds on federal lands as a basis for ecosystem planning and management.

The second component of the Northwest Forest Plan is an economic assistance program aimed at helping the region adjust to changes in federal forest management. The Environmental Protection Agency, the Small Business Administration, and agencies within five federal

[21]Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl, Forest Service and BLM (Apr. 1994).

[22]GAO uses the term Pacific Northwest to describe lands in northern California, western Oregon, and western Washington.

departments—Agriculture, Housing and Urban Development, Labor, Commerce, and the Interior—are to provide $1.2 billion in funding to communities, tribes, businesses, and individuals to help them make the transition from dependency on federal timber to other employment opportunities.[23] Additionally, the Corps of Engineers participated in both the ecological and economic components of the Northwest Forest Plan.

Development and Implementation of the Northwest Forest Plan Has Addressed Many Long-Standing Planning Deficiencies

An ecosystem-based regional land management plan has helped federal land management agencies reconcile differences in the geographic areas that must be considered in reaching decisions under different planning and environmental laws. Additionally, in developing and implementing the plan, the agencies addressed long-standing deficiencies in, and barriers to, timely, orderly, and cost-effective land management planning. These deficiencies include a lack of (1) accountability for the time and costs in developing plans, (2) adequate involvement in the decision-making process by other federal agencies and the public, (3) comparable environmental and scientific data among agencies, and (4) monitoring to determine the effects of past management decisions.[24]

Development of the Northwest Forest Plan Followed the Practical Steps in Implementing an Ecosystem Approach to Federal Land Management

Because the boundaries of administrative units and natural systems are frequently different, federal land management plans have often considered effects only on those portions of natural systems or portions of their components—such as the habitats of threatened and endangered species—that exist within the boundaries of the administrative units covered by the plans. Because the habitat of the northern spotted owl extends over many Forest Service and BLM administrative units, a new approach was needed. The agencies developed the Northwest Forest Plan using an approach consistent with the practical steps we identified to implement ecosystem management.[25] (See fig. I.1).

The agencies accomplished the first step when they delineated an ecosystem that matched the geographic scope of the issue at hand, namely the habitat range of the northern spotted owl, without regard to

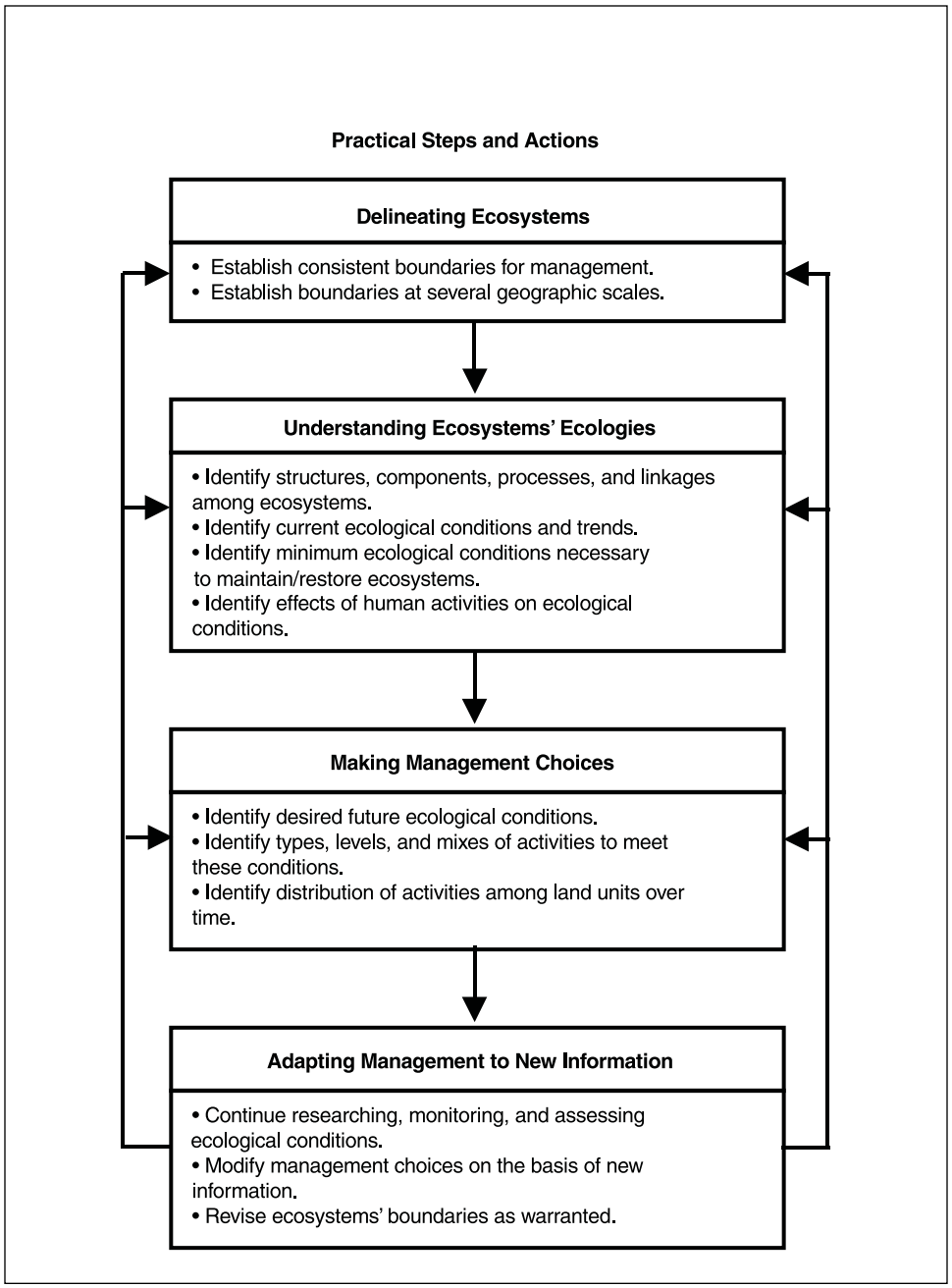
[23]The economic assistance program is not evaluated in this report.

[24]Ecosystem Management: Additional Actions Needed to Adequately Test a Promising Approach (GAO/RCED-94-111, Aug. 16, 1994), Forest Service Decision-Making: A Framework for Improving Performance (GAO/RCED-97-71, Apr. 29, 1997), and Tongass National Forest: Lack of Accountability for Time and Costs Has Delayed Forest Plan Revision (GAO/T-RCED-97-153, Apr. 29, 1997).

[25]See, for example, Ecosystem Management: Additional Actions Needed to Adequately Test a Promising Approach (GAO/RCED-94-111, Aug. 16, 1994) and Forest Service Decision-Making: A Framework for Improving Performance (GAO/RCED-97-71, Apr. 29, 1997).

administrative boundaries. This allowed the agencies to analyze ecological issues at an appropriate geographic scale, and the resulting plan establishes a consistent boundary for management. Other issues, such as providing high-quality water, are addressed at smaller, more appropriate, geographic scales.

Figure I.1: Practical Steps to Implement Ecosystem Management



Source: Ecosystem Management: Additional Actions Needed to Adequately Test a Promising Approach (GAO/RCED-94-111, Aug. 16, 1994).

Under the second step, six federal agencies performed a scientific assessment and also described current and desired ecological conditions within the owl's range. The desired ecological conditions represent the minimum level of integrity and functioning—or threshold—needed to maintain or restore a healthy ecosystem.

Under the third step, the agencies identified in the plan the types of activities that are prohibited in each of the seven land categories. They also described the conditions—sometimes referred to as desired future conditions—that should occur in each category.

To accomplish the fourth step, the plan requires a continuous monitoring program, the results of which could lead to changes in management direction. In addition, the plan allocated 6 percent of the lands to 10 adaptive management areas where the agencies can develop and test innovative land management approaches to achieve ecological and economic goals and revise or amend the plan accordingly. For example, one area is developing and testing approaches to integrate timber production with the restoration and maintenance of riparian habitat.

After an Initial Delay, the Regional Plan Was Developed in a Timely and Cost-Effective Manner

Initially, even after federal courts enjoined the agencies from selling timber, the Forest Service and BLM were slow to develop plans adequate to protect the owl until the President became involved. Fueled by a sense of urgency related to the court injunctions, as well as strong leadership within the administration and clear objectives, six federal agencies developed a regional land management plan in a timely and cost-effective manner.

In October 1989, the Congress directed the Forest Service to develop a plan to conserve the species by September 30, 1990.[26] The agency failed to produce a plan by the deadline. In May 1991, a federal district court judge enjoined the Forest Service from selling timber in owl habitat, noting that the agency's failure to develop a conservation plan exemplified a "deliberate and systematic" refusal by the Forest Service and the Fish and Wildlife Service to comply with the laws protecting wildlife. The court ordered that a plan be completed by March 1992. In July 1992, the judge rejected the plan developed by the Forest Service and issued another injunction barring the agency from selling timber in owl habitat until it made changes to the plan to address, among other things, the viability of

[26]Department of the Interior and Related Agencies Appropriations Act for Fiscal Year 1990, P.L. 101-121, 103 Stat. 747.

other old-growth-dependent species. The court ordered that a plan be completed by August 1993. Similarly, in February 1992, another federal district court judge enjoined BLM from selling timber in owl habitat until it analyzed the effects of logging in the species' habitat.[27]

To end the impasse, the President convened a forest conference in Portland, Oregon, in April 1993, at which he directed his cabinet to develop the required plan. The scientific assessment by the six federal agencies that described current and desired ecological conditions within the owl's range was completed in about 3 months. In April 1994, the departments of Agriculture and the Interior approved the Northwest Forest Plan, completing their efforts a year after the forest conference, at a cost of about $3.5 million. In comparison, the Forest Service spent about 10 years and $13 million revising the land management plan for the Tongass National Forest in southeastern Alaska.[28]

Key differences between the process used to develop the Northwest Forest Plan and the process previously used by the Forest Service to amend or revise forest plans such as the one for the Tongass National Forest contributed to the plan's timely and cost-effective development. These differences include (1) the sense of urgency related to the court injunctions, (2) the strong leadership displayed by the President and the involvement of high-ranking administration officials in developing the plan, and (3) clear objectives based in part on the need to preserve the habitat of the northern spotted owl and other old-growth-dependent species.

Interagency Coordination Has Improved Under the Plan

Before the Northwest Forest Plan was developed, a lack of coordination among federal agencies had been identified as a major cause of the impasse that existed in the region. Virtually all parties involved in the conflict over the use of late-successional forests[29] agreed that federal agencies would need to work together to improve coordination and communication.

Interagency coordination in the development of the land management plan began with the scientific assessment by the Forest Service, BLM, the Fish

[27]Portland Audubon Society v. Lujan, 784 F. Supp 786 (D. Or. 1992).

[28]Tongass National Forest: Lack of Accountability for Time and Costs Has Delayed Forest Plan Revision (GAO/T-RCED-97-153, Apr. 29, 1997).

[29]Late-successional forests contain trees that are at least 80 years old and can include old-growth forests made up of trees that are at least 180 to 220 years old.

and Wildlife Service, the National Park Service, the National Marine Fisheries Service, and the Environmental Protection Agency. Additionally, these six agencies—together with the U.S. Army Corps of Engineers; Agriculture's Natural Resources Conservation Service; and Interior's Bureau of Indian Affairs, U.S. Geological Survey, and National Biological Service[30]—developed a guide intended to standardize the process for conducting watershed analyses under the plan's aquatic conservation strategy.[31] The guide provides a systematic way to understand and organize ecosystem information and to estimate the effects of management activities. The guide has been credited with increasing the consistency with which a watershed's condition is assessed.

Also, in 1995, four agencies—the Forest Service, BLM, the Fish and Wildlife Service, and the National Marine Fisheries Service—developed a streamlined Endangered Species Act consultation process. According to agency officials, the process has generally decreased the time and resources needed for consultation on a project in the area covered by the plan. However, they noted that further improvements are still needed.

Finally, the Northwest Forest Plan created interagency committees and an office to bring together officials from various agencies to help establish policy and to provide scientific and research information to line managers. For example, the Regional Ecosystem Office was established to support a group of senior regional officials—the Regional Interagency Executive Committee—in implementing the Northwest Forest Plan. Members of the Regional Ecosystem Office are detailed from each of the federal agencies responsible for forest management in the region. The office is a focal point for scientific, technical, administrative, and policy expertise. According to the National Marine Fisheries Service, the Northwest Forest Plan's interagency agreements have resulted in "substantial staff efficiencies" and have helped to defuse "the friction that previously resulted from conflicting agency mandates."

Opportunities for Public Participation Have Improved Under the Plan

Virtually all parties involved in the conflict agreed that states, tribes, local governments, and the public should have a better opportunity to share their concerns, issues, and ideas directly with federal decisionmakers on how the forests should be managed. Because of the urgent need to resolve

[30]In 1996, the National Biological Service became the Biological Resources Division of the U.S. Geological Survey.

[31]Ecosystem Analysis at the Watershed Scale: Federal Guide for Watershed Analysis, the Regional Interagency Executive Committee and the Intergovernmental Advisory Committee, Portland, Ore. (Aug. 1995). In addition to federal agencies, tribal governments, and the states of California, Oregon, and Washington and associated counties helped develop the guide.

the court injunctions, the public was not directly involved in the scientific assessment that began the process to develop the Northwest Forest Plan. However, public comments were requested, and over 100,000 were received, on the draft supplemental environmental impact statement that compared the potential environmental and economic impact of each of the 10 management alternatives included in the assessment.

Since the plan was approved, federal agencies have shown a willingness to involve nonfederal parties in their decision-making and to come together with these parties to discuss, understand, and address their concerns. Toward this end, 12 Provincial Advisory Committees were created—one for each of the geographic provinces identified in the plan—to involve local governments, tribes, and the public in managing the region's forests. Members of these committees may include representatives from state, county, and tribal governments; the timber industry; environmental groups; recreation and tourism organizations; and the public at large, as well as officials from the federal agencies. Among other things, these committees participated in areawide reviews in fiscal years 1996, 1997, and 1998 to determine whether timber sales, forest roads, and restoration activities were in compliance with the plan's requirements (implementation monitoring).

Nonfederal parties have also been involved in analyzing watershed conditions on Forest Service and BLM lands. For example, the municipal watershed for the city of Sandy, Oregon, was included in a watershed analysis conducted by the Forest Service in conjunction with BLM, the Fish and Wildlife Service, and the city of Sandy. After completing the watershed analysis, the Forest Service and BLM entered into a formal memorandum of understanding with the city to maintain or improve the quality and quantity of water from the watershed.

Efforts Are Under Way to Collect and Use Comparable Environmental Data

According to a recent Council on Environmental Quality report,[32] the team that prepared the scientific assessment found that the agencies' history of dealing with environmental issues on a small scale, such as individual sites, left the agencies with data for the region that were inconsistent from place to place and difficult to use with precision for analyzing natural resource issues at larger scales. Since the Northwest Forest Plan was approved, progress has been made in standardizing the data to be collected and in mapping federal lands on a consistent scale across the

[32]J. Pipkin, The Northwest Forest Plan Revisited (Sept. 1998). Mr. Pipkin is the Director of the Office of Policy Analysis at the Department of the Interior. The report was commissioned by the Council on Environmental Quality.

region. For example, Forest Service and BLM data on vegetation across the region are being combined into one map. Once the map is completed, the agencies will be able to update the map with new information as the vegetation changes over time. According to a BLM official, the agencies will also use the map as a basis for other maps, such as a map of northern spotted owl habitat.

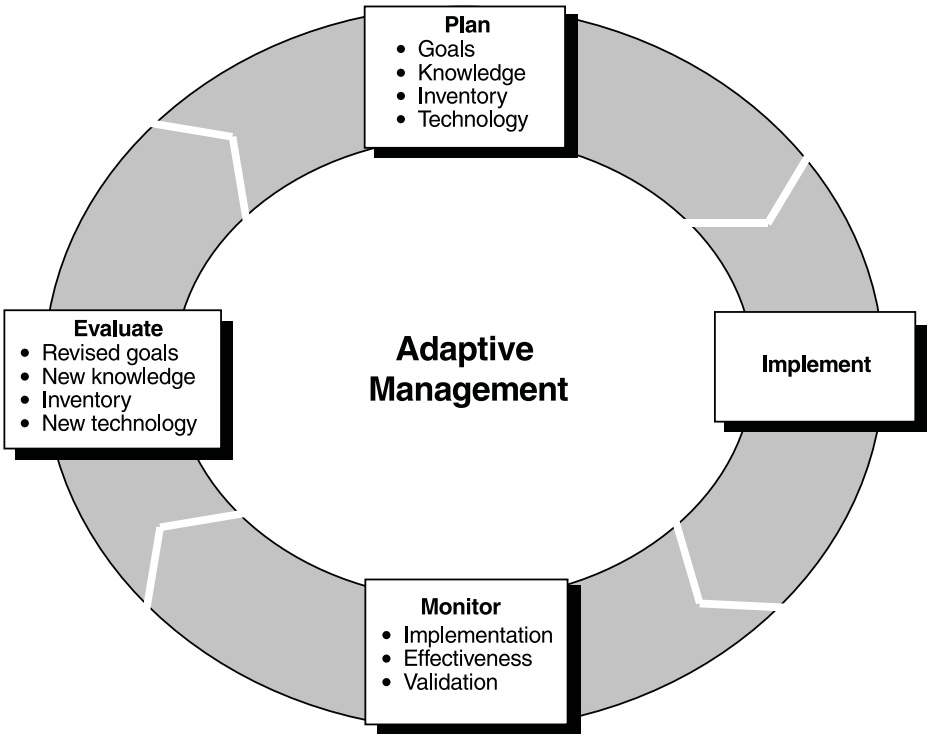
In addition, both the Forest Service and BLM are accumulating data across large areas within the region and testing the data to see if they are useful to land managers for decision-making. For example, the Forest Service is developing a data set for an area in the Coast mountain range in Oregon that includes information on forest cover and landowners' behavior for both federal and nonfederal lands. Using the data set, the agency can project the effect of proposed land management decisions over time to predict what the landscape will look like up to 100 years in the future.

BLM has compiled a data set for the Umpqua River basin in Oregon and may use it for long-term planning in the area. Agency officials showed us how the data can be used to identify locations where land management activities, such as timber harvesting, will produce the smallest impact on the landscape. Officials from the Fish and Wildlife Service, the National Marine Fisheries Service, and the Environmental Protection Agency support BLM's use of the data set for the long-term planning of projects, stating that planning based on data across a large area will help them in reaching decisions about the impact of BLM's projects on threatened and endangered species and on water quality.

The Northwest Forest Plan Requires Regional Monitoring and Adaptive Management

Monitoring is an essential component of natural resource management because it provides information on the relative success of management strategies in achieving desired ecological conditions and management objectives. Monitoring is linked to the process of adaptive management—a continuous cycle of planning, acting, monitoring, and evaluating—that can lead to continuous improvement in land management. (See fig. I.2.)

Figure I.2: Adaptive Management Cycle



Source: Adapted from Forest Ecosystem Management: An Ecological, Economic, and Social Assessment, Report of the Forest Ecosystem Management Assessment Team (July 1993).

The Northwest Forest Plan requires the agencies to monitor their land management activities to determine whether (1) the plan's standards and guidelines are being followed (implementation monitoring), (2) they are achieving the plan's desired results (effectiveness monitoring), and (3) the plan's underlying assumptions about the activities are sound (validation monitoring). The agencies have completed 3 years of implementation monitoring and are beginning to do effectiveness monitoring. They have not developed a plan for validation monitoring, but agency officials told us that some validation monitoring is being performed.

The Northwest Forest Plan Provides a Wide Range of Ecosystem Benefits

The Northwest Forest Plan was the first broad-scale attempt to apply an ecosystem approach to resolving natural resource issues. It not only caused the injunctions against federal timber sales to be lifted but also provided guidance on protecting the environment across the ecosystem, including areas critical to water quality. As a result, the plan benefits other federal agencies—such as the National Marine Fisheries Service, the Environmental Protection Agency, and the National Park Service—that are not bound by the plan's standards and guidelines.

The Northwest Forest Plan Provides Management Direction for More Than Protecting Northern Spotted Owl Habitat

According to a federal judge, the agencies creating the Northwest Forest Plan could not comply with environmental laws without planning on an ecosystem basis. Although the original controversy focused on protecting northern spotted owl habitat, the plan contains provisions to protect other species and to restore and maintain watersheds because these activities are important to the overall health of the ecosystem.

To meet the agencies' obligations under the Endangered Species Act, the plan designated over 10 million acres, or more than 40 percent of the federal land in the plan area, as reserves to conserve and create habitat for listed species. This area also provides habitat for many other species that are not listed. The plan also requires the agencies to gather data on the habitat and location of over 400 species in the plan area that are not listed but about which little is known. If the agencies find rare and sensitive species among this group, they may decide that management actions are needed to keep them from becoming threatened or endangered.

To maintain and restore the ecological health of watersheds and the aquatic environment, the plan established an aquatic conservation strategy. The strategy contains four components: (1) creating reserves to protect lands along streams; (2) designating "key" watersheds that provide high-quality water and habitat for at-risk fish species; (3) performing ecological analyses of key and other watersheds to aid in planning management activities; and (4) restoring the health of watersheds and the aquatic environment.

To implement the aquatic conservation strategy, the Northwest Forest Plan set aside over 2.6 million acres as riparian reserves. The plan also designated over 9 million acres as key watersheds in which no major activity—such as timber harvesting—can take place until an ecological analysis of the watershed has been completed. The agencies have made progress in completing watershed analyses for both key and other

watersheds. As of 1997, the Forest Service had completed 234 watershed analyses of the 480 it planned to complete and BLM had completed 70 analyses, covering about 70 percent of its lands in the plan area. Finally, the agencies have performed watershed restoration activities. For example, from 1994 to 1997, the Forest Service completed riparian restoration projects, such as planting vegetation, on almost 16,000 acres.

The Northwest Forest Plan Provides Benefits to Other Agencies Not Directly Affected by the Plan's Management Direction

Although the Northwest Forest Plan's management direction is specific to the Forest Service's and BLM's land management activities, other federal agencies report that they have benefited from the plan in ways that will help them accomplish their missions. For example, according to the National Marine Fisheries Service, it has successfully applied the science from the plan's scientific assessment in a variety of nonfederal habitat conservation efforts in various parts of the country. The National Park Service pointed out that four of its parks are adjacent to late-successional reserves designated by the plan and that the reserves will contribute to the parks' biological diversity, wildlife viability, and ecological integrity. Officials from the Environmental Protection Agency have also identified ways in which the plan has helped the agency carry out its environmental protection missions. For example, riparian reserve stream buffers created by the plan have enhanced source water protection—a responsibility for the agency under the Safe Drinking Water Act. The Environmental Protection Agency has also been able to share watershed data gathered under the plan, thereby reducing the burden of acquiring and managing it.

All three agencies have indicated that the interagency collaboration that occurred during the development of the Northwest Forest Plan has continued beyond the plan's implementation. For example, according to the National Marine Fisheries Service, the agency has colocated a field office with other federal agencies, resulting in improved working relationships and enhanced resource protection. An Environmental Protection Agency official noted that the success of the interagency collaboration on the Northwest Forest Plan contributed to collaboration on other efforts, such as the interior Columbia River basin planning effort.

Timber Volume and Quality Have Declined and Costs Have Increased Under the Northwest Forest Plan

The Northwest Forest Plan satisfied the courts so that they were willing to lift the injunctions barring the Forest Service and BLM from selling timber in northern spotted owl habitat. The plan satisfied the requirements of the Endangered Species Act and the National Forest Management Act and its implementing regulations. It also provided assurance that the processes and functions of late-successional and old-growth forest ecosystems, as well as of the riparian habitat essential for many aquatic and terrestrial species, would be maintained and restored. In addition, the plan provided guidance to federal agencies on protecting the environment.

However, to comply with the statutory requirements incorporated in the plan, the Forest Service and BLM have had to, among other things, (1) significantly reduce the volume and commercial quality of the timber sold and (2) significantly reduce the use of clear-cutting as the preferred method to harvest timber.[33] As a result, the agencies' costs to provide timber and loggers' costs to harvest it have significantly increased on a per-unit basis.

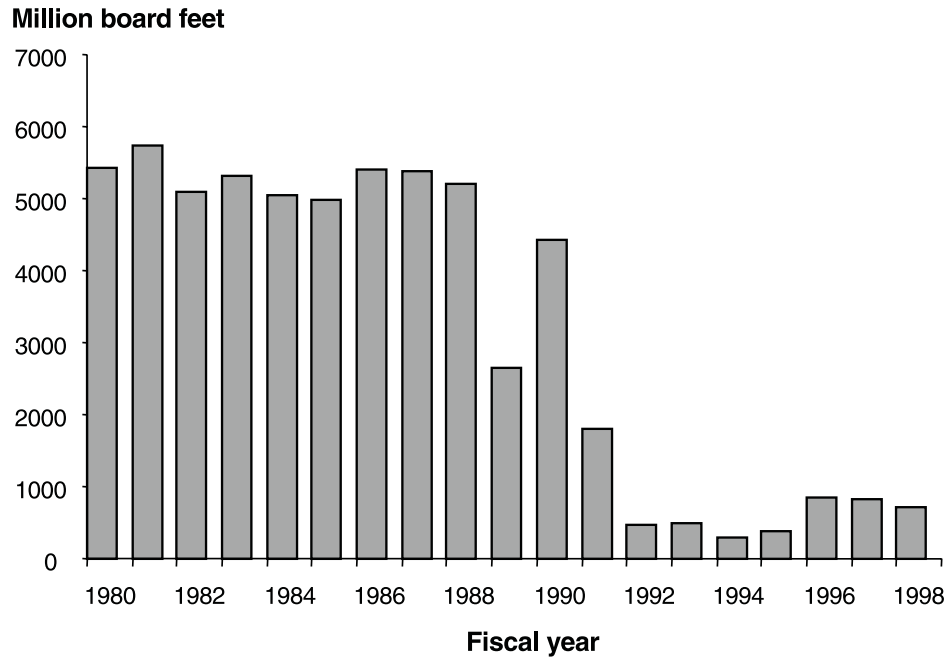
The Volume of Timber Sold Has Decreased Significantly

The fertile soils of the Pacific Northwest provide some of the best conditions in the United States for growing trees, and federal lands in the region are recognized as some of the nation's most productive and valuable commercial forest properties. From fiscal year 1980 through fiscal year 1989—the last year before federal timber sales in northern spotted owl habitat were barred by court-ordered injunctions—the Forest Service and BLM sold an average of 5 billion board feet of timber per year from the lands bounded by the plan.[34] During the first 4 full fiscal years of the plan—fiscal years 1995-98—timber sales from federal lands bound by the plan averaged about 687 million board feet per year, or less than 14 percent of the volume sold during the 1980s. (See fig. I.3.)

[33]Clear-cutting is a harvesting method that removes all trees from a timber-harvesting site at one time.

[34]Different methods for estimating board feet yield different estimates. To account for these differences, we have converted all board feet volumes into a standard measure using the method of estimation employed by the Forest Service's Northwest Region.

Figure I.3: Volume of Timber Sold From Federal Lands in the Northwest Forest Plan Area, Fiscal Years 1980-98



Sources: Forest Service and BLM.

The authors of the Northwest Forest Plan concluded in an environmental impact statement that the volume of timber sold from federal lands in the Pacific Northwest during the 1980s could not be sustained. The plan's scientific assessment concluded that the situation in the Pacific Northwest had reached a point where satisfying the requirements of the Endangered Species Act and other applicable laws required a course of action that would substantially reduce the availability of timber from federal forests in the region inhabited by the northern spotted owl. As a result, the Northwest Forest Plan imposes management restrictions on late-successional timber stands and other ecologically important areas, resulting in a sharp decline in the projected volume of timber available for sale from federal lands in the Pacific Northwest. The plan anticipated that the volume of timber available for sale over the first 10 years of the

plan—called the probable sales quantity—would be about 9.58 billion board feet, or an average of about 958 million board feet per year.[35]

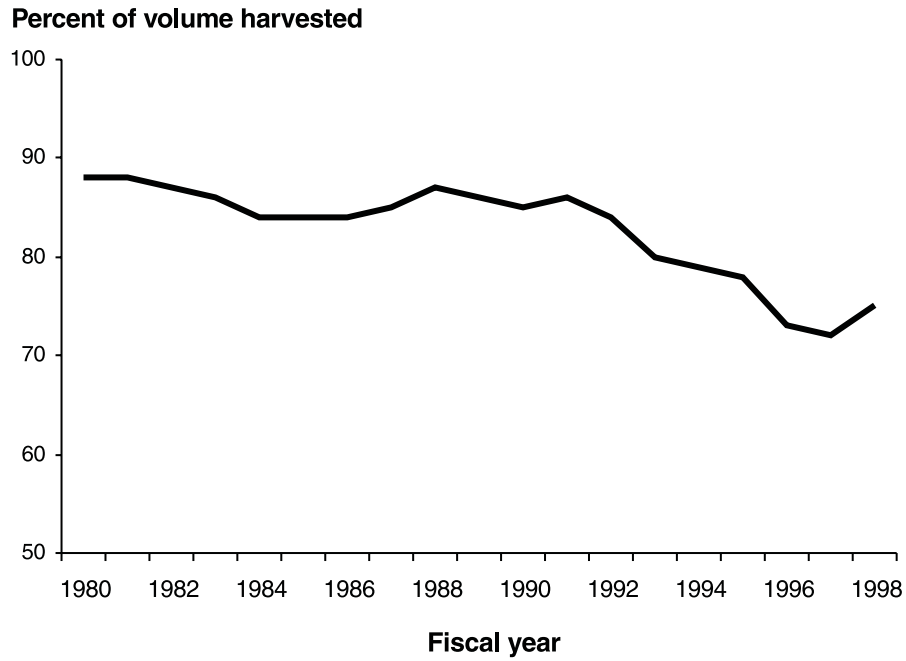
The Quality of Timber Harvested From Federal Lands in the Pacific Northwest Has Declined

Not only has the volume of timber sold from federal lands in the Pacific Northwest declined but so also has the quality of the timber harvested. Restrictions on the location and age of trees that can be harvested are intended to protect and enhance the habitat of the northern spotted owl and other species that depend on the region's late-successional and old-growth forests. However, these restrictions also limit the harvesting of some of the most commercially valuable trees. For instance, restrictions on harvesting older trees have contributed to the decline in timber available to produce lumber and other commercially valuable products—known as sawtimber.[36] As a proportion of timber harvested from Forest Service lands, sawtimber fell from an average of almost 86 percent during the 1980s to an average of less than 75 percent during fiscal years 1995-98. (See fig. I.4.)

[35]This estimate does not include "other wood." Other wood is wood that is too decayed, crooked, small, or otherwise unsuitable for processing into a saleable product. Historically, other wood has accounted for about 10 percent of the total harvest volume from timber-suitable federal lands in the planning area. The original probable sale quantity of 958 million board feet per year grew to 1.054 billion board feet (rounded to 1.1 billion board feet in some instances) when a 10-percent increase was included for other wood.

[36]When trees are harvested and cut into logs, they are graded on the basis of qualities such as the diameter of the log and how clear, or free of knots, the wood is. Sawtimber is typically more valuable than other timber because it can be manufactured into a broader array of wood products and often contains a larger amount of clear, high-grade wood.

Figure I.4: Sawtimber as a Percentage of Total Volume of Timber Harvested From Forest Service Lands in the Pacific Northwest, Fiscal Years 1980-98

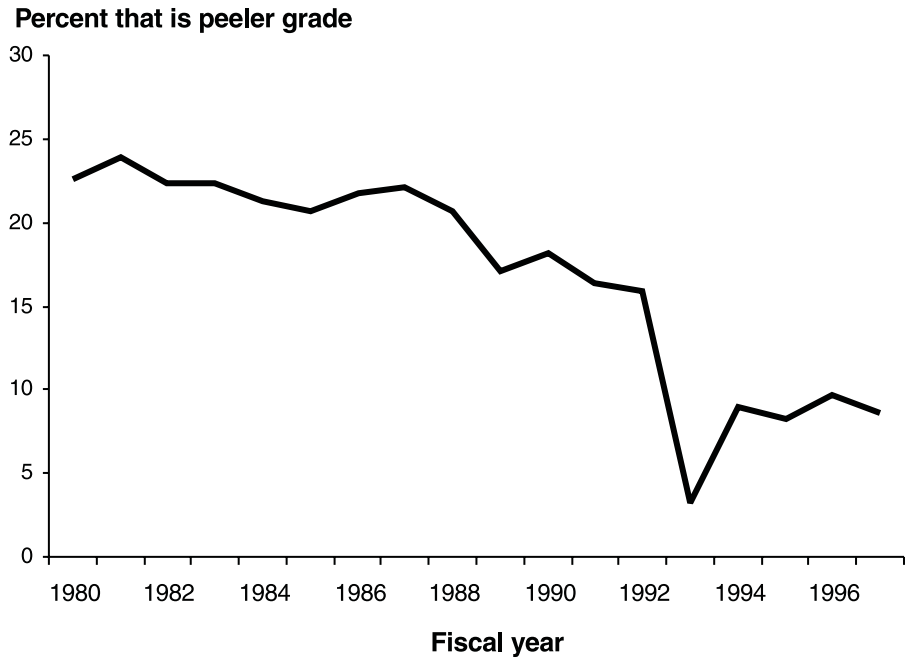


Source: Forest Service.

Moreover, the quality of the sawtimber harvested from federal lands in the Pacific Northwest has dropped, as illustrated by the decrease in the percentage of high-quality Douglas fir sold in the area covered by the Northwest Forest Plan. Douglas fir accounts for about two-thirds of the timber volume harvested from federal lands in the Pacific Northwest. It is one of the most commercially valuable tree species because of its size and quality. The most valuable Douglas fir are often found in late-successional and old-growth forests. However, the quality of the Douglas fir sawtimber that is being sold has dropped dramatically, in part because of the Northwest Forest Plan's restrictions on harvesting in late-successional and old-growth areas. During the 1980s, about 22 percent of the Douglas fir sawtimber sold from federal lands in western Oregon and western

Washington was graded as the highest quality.[37] This figure dropped to about 9 percent for fiscal years 1995-97. (See fig. I.5.)

Figure I.5: Percentage of High-Grade Douglas Fir Sold on Federal Lands in Western Oregon and Western Washington, Fiscal Years 1980-97



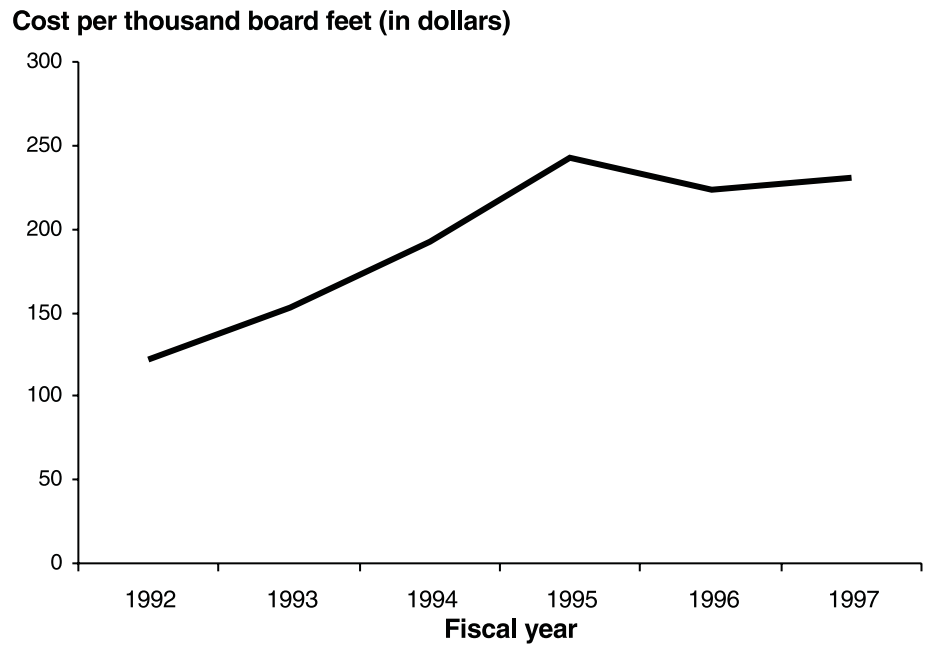
Source: Timber Data Company.

[37]The highest-quality sawtimber, logs known as "peelers," were so named because, historically, they were "peeled" to make veneer. Species of trees are graded on different scales. Only some species can produce logs of sufficiently high quality to be graded as peelers. Douglas fir grown west of the Cascade ridge is of such high quality that it has more than one grade of peeler—it has four grades.

Timber Program's Per-Unit Costs Have Increased for Land Management Agencies and Loggers in the Pacific Northwest

While the volume and quality of timber have declined, the unit cost to the Forest Service to operate the timber program and the unit cost to private companies that harvest the timber have risen dramatically. In fiscal year 1992, the Forest Service spent about $126 per thousand board feet to operate the timber program.[38] By fiscal year 1997 the cost had almost doubled to $243 per thousand board feet.[39] (See fig. I.6.)

Figure I.6: Cost Per Thousand Board Feet to Operate the Forest Service's Timber Program in the Pacific Northwest, Fiscal Years 1992-97



Source: Forest Service.

The Forest Service reports that nationally, per-unit costs have increased because the fixed costs of conducting the timber sale program, such as the

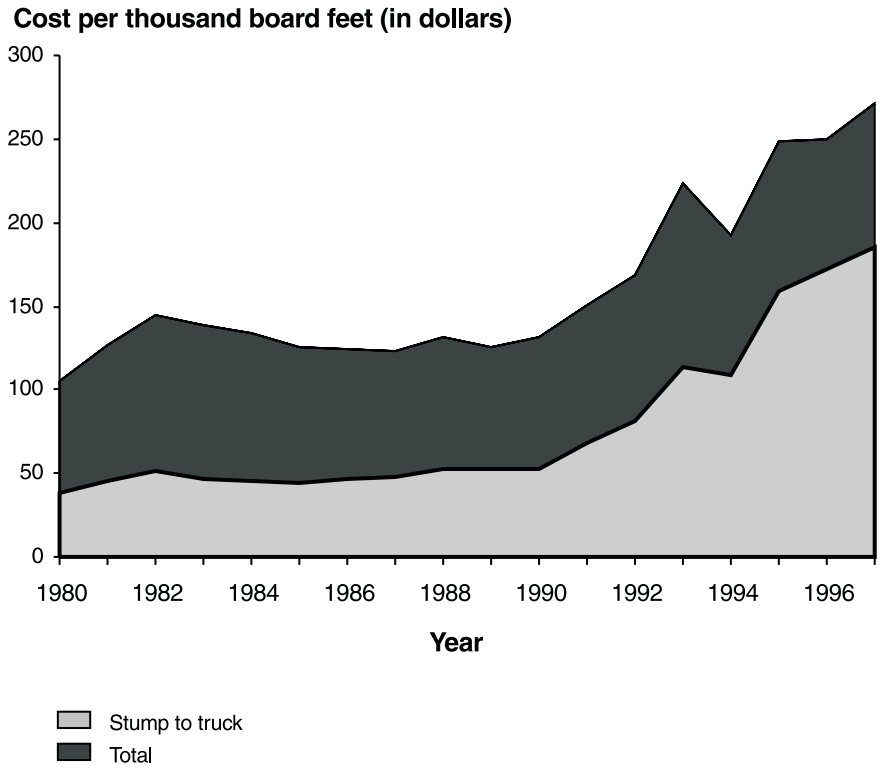
[38]This includes all direct and indirect costs. Direct costs include the expenses for such activities as preparing and administering timber sales and reforesting cutover areas. Indirect costs mainly include the expenses for responding to appeals and litigation, as well as general administrative costs.

[39]For fiscal year 1997, the federal government adopted new accounting standards that require the Forest Service to include the cost of road construction as an annual expense instead of carrying the cost as an asset on its balance sheet. This change was responsible for an 8.4-percent increase in the reported cost of the Forest Service's national timber program for fiscal year 1997.

expenses associated with depreciation on facilities and roads, have not changed, even though less timber is being sold. Additionally, certain activities that contribute to the cost of the timber program—such as sale preparation and harvest administration—are less efficient at lower harvest levels. As a result, the unit cost of performing these activities has generally increased as the size of the timber program has decreased.

The unit cost per board foot to loggers to harvest timber on federal lands in the Pacific Northwest has also increased dramatically, in large part because of the more environmentally sensitive harvesting methods required on federal lands. Virtually all of this cost increase can be attributed to the increase in the stump-to-truck cost, that is, the cost to fell a tree, prepare it for transportation, and load it on a truck. (See fig. I.7.)

Figure I.7: Cost Per Thousand Board Feet to Log in National Forests in Western Washington and Western Oregon, Fiscal Years 1980-97



Source: Timber Data Company.

These costs have increased, in part, because clear-cutting, which is a relatively economical method of harvesting, has been significantly reduced, and more costly and time-consuming timber-harvesting methods are being used. For example, a growing number of federal land managers are requiring environmentally sensitive logging techniques that also increase costs, such as having loggers use helicopters to remove trees from an area instead of having trucks drive to the harvesting site, which could damage the environment.

The Quantity and Quality of Federal Timber From the Pacific Northwest Will Remain Low and Unit Costs Will Remain High

The overall decline in the quantity and quality of timber from federal lands covered by the Northwest Forest Plan is unlikely to be reversed, given existing laws, including the Endangered Species Act, and their implementing regulations and judicial interpretations. Although restrictions imposed by the plan to comply with these laws caused the federal injunctions to be lifted, they also resulted in reduced timber sales, lower-quality timber, and increases in per-unit costs for federal agencies to operate the timber program, and for loggers to harvest timber from federal lands. The Forest Service and BLM estimate that the most likely volume of timber sold in an average year during the first decade of the plan will be about 746 million board feet. This level of annual sales is not significantly above the lowest level of sales experienced as a result of the injunctions—about 300 million board feet—when compared with the 5 billion board feet of timber sold in an average year during the 1980's. The restrictions imposed by the plan that reduced timber sales to this level are likely to keep them at about this level. Additionally, because these restrictions are also responsible for reducing the timber's quality and increasing the program's operating and harvesting costs, the quality and costs are unlikely to change substantially.

Timber's Declining Quantity and Quality Are Primarily the Results of Statutory Requirements

Although the sharp decline in the volume of timber sold can be traced to the court injunctions and the quantity and quality of the timber currently available for sale can be traced to specific components of the plan, cutbacks in the timber program can generally be traced to requirements in federal planning and environmental laws. These laws include the Endangered Species Act, the National Forest Management Act, the Federal Land Policy and Management Act, the Clean Water Act, and the Clean Air Act. Further requirements are embodied in the laws' implementing regulations and judicial interpretations.[40] These laws define minimum

[40] Forest Service Decision-Making: A Framework for Improving Performance (GAO/RCED-97-71, Apr. 29, 1997).

levels—or thresholds—to be met to protect individual natural resources or assign responsibility for defining these levels to executive branch officials.[41]

According to the plan, the sharp drop in timber volume from the levels that prevailed during the 1980s is a consequence of previous high harvest levels that severely limited the options available to land managers attempting to comply with the environmental laws. For example, the alternative options considered during the plan's development that would have provided higher probable sale quantities were not adopted because they were deemed incompatible with the requirements of the Endangered Species Act or the National Forest Management Act and its implementing regulations.

The decrease in the quality of federal timber sold in the Pacific Northwest is also ultimately attributable to the requirements of planning and environmental laws. For example, the Forest Service believes that legal requirements—coupled with changes in public attitudes concerning the most appropriate management priorities for national forest lands—resulted in a shift toward using timber sales to accomplish stewardship objectives instead of providing wood.[42] The Forest Service has shifted its management emphasis under its broad multiple-use and sustained-yield mandate from consumption (primarily producing timber) to conservation (primarily sustaining wildlife and fish). It has also made clear that its overriding mission and funding priority is to maintain and restore the health of the lands entrusted to its care, and it has stated its intention to limit goods and services—including commercial sawtimber and other forest products—to the types, levels, and mixes that the lands are capable of sustaining.[43]

In the past, the primary purpose of most timber sales was to help meet this demand for wood products; therefore, these sales included a significant amount of commercially valuable timber. However, more and more timber sales are being designed to help attain various stewardship objectives. For example, sales are being used as a tool to accelerate the development of

[41]Ecosystem Management: Additional Actions Needed to Adequately Test a Promising Approach (GAO/RCED-94-111, Aug. 16, 1994).

[42]See for example, Forest Management Program Report, Fiscal Year 1997, Forest Service (FS-627, July 1998) and Changing Economics of the National Forest Timber Sale Program, Forest Service (1998).

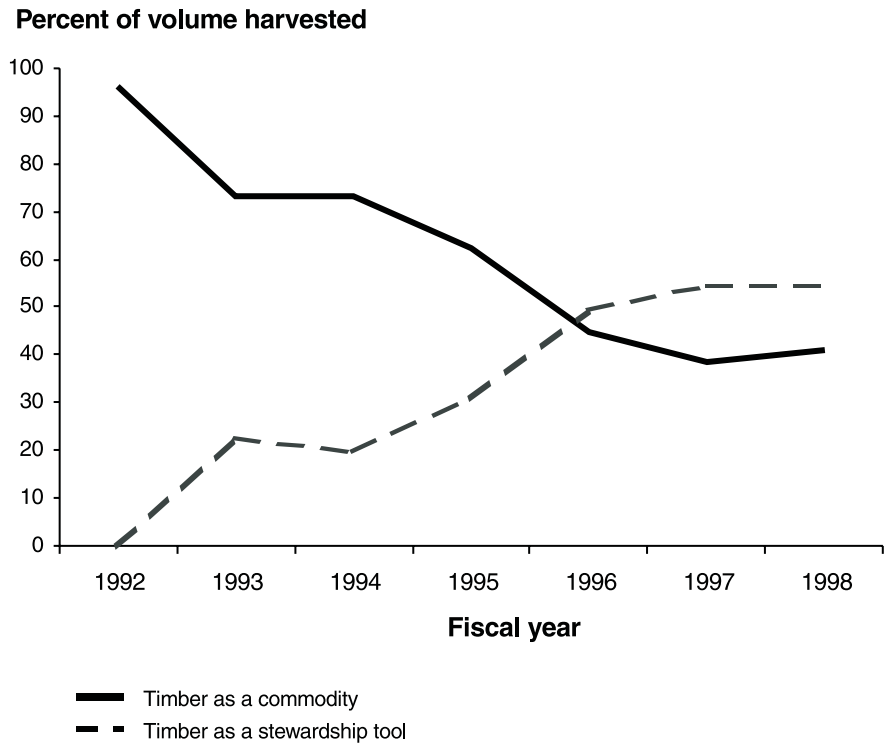
[43]Forest Service: Lack of Financial and Performance Accountability Has Resulted in Inefficiency and Waste (GAO/T-RCED/AIMD-98-135, Mar. 26, 1998) and Forest Service Management: Little Has Changed as a Result of the Fiscal Year 1995 Budget Reforms (GAO/RCED-99-2, Dec. 2, 1998).

late-successional conditions in young forest stands. While these sales are designed to yield a profit whenever circumstances allow, the size, type, and quality of the timber sold are dictated by the desired stewardship outcome. As a result, the types of trees being harvested have shifted from live to dead and dying trees and from large-diameter to small-diameter trees.

This shift in emphasis is notable in the Pacific Northwest. Between fiscal year 1992 and fiscal year 1997, the proportion of timber harvested from Forest Service lands in the Pacific Northwest primarily to help meet the nation's demand for wood fell from about 96 percent to about 39 percent of the harvest's total volume, while the proportion of timber harvested for forest stewardship purposes grew from less than 1 percent to about 55 percent.[44] (See fig. I.8.)

[44]A third type of timber harvest, personal use sales, remained relatively steady, ranging between about 4 and about 7 percent of the Forest Service's volume in the Pacific Northwest between fiscal year 1992 and fiscal year 1997. Personal use harvests are intended primarily to supply firewood, Christmas trees, and other miscellaneous forest products to individuals for their own consumption.

Figure I.8: Timber Volumes Harvested From Forest Service Lands in the Pacific Northwest to Meet Commodity and Stewardship Objectives, Fiscal Years 1992-98



Source: Forest Service.

The Quantity and Quality of Timber Sold Are Unlikely to Increase Substantially Over Levels Experienced During the Injunctions

According to the original estimate in the Northwest Forest Plan, the likely amount of timber the Forest Service and BLM would be able to sell during the first decade of the plan—the probable sale quantity—would average about 958 million board feet per year. However, by August 1995, just 16 months after the plan was finalized, the Forest Service and BLM had reduced the probable sale quantity to 840 million board feet per year. Moreover, the Forest Service expects to further reduce its portion of the probable sale quantity and estimates that the resulting total probable sale quantity will fall to an average annual level of 746 million board feet—22 percent less than the originally estimated probable sale quantity. The drop in probable sale quantity bears out the plan's observation that changes could occur. For example, the plan noted that timber sale levels could be affected by requirements for conducting additional environmental analysis or setting aside additional lands to protect

threatened or endangered species or by a change in the acreage allocated to riparian reserves following an analysis and inventory of intermittent steams. Officials told us that the probable sale quantity will likely change yet again.

Even if the probable sale quantity does not drop below an average of 746 million board feet per year, this level of sales is only a small fraction of the levels common during the 1980s, and, from this perspective, it is not significantly higher than the levels under the federal court injunctions (see fig. I.3). Timber sales reached their lowest level as a result of the injunctions in fiscal year 1994, when the agencies sold 297 million board feet, or about 6 percent of the 5 billion board feet sold, on average, each year during the 1980s. The most likely average annual sale level under the plan is about 746 million board feet, or about 15 percent of the level sold during the 1980s. There is only a 9-percent difference between the level predicted under the plan and the lowest level under the injunctions when compared with the average level during the 1980s.

Furthermore, even if the probable sale quantity does rise, it is unlikely that timber sales will increase significantly. Since the plan was approved, additional species have been listed as threatened and endangered, and agreements have been signed that require federal lands to assume a growing proportion of the responsibility for protecting wildlife and fish. These developments suggest that timber sales under the Northwest Forest Plan may have peaked in fiscal year 1996, when 841 million board feet were sold.

While the management direction in the Northwest Forest Plan is intended to support the recovery of the northern spotted owl and conserve other species dependent on old-growth forests by maintaining the ecological health of forested and aquatic ecosystems, 18 species in the plan area have been listed as endangered or threatened under the Endangered Species Act since the plan was approved—15 fish, 1 frog, and 2 plants. Although 9 of these species were recently listed (March 1999), the new listings are not expected to affect federal timber sales in the Pacific Northwest because the listings are for salmon and trout species whose habitat requirements are similar to those of the salmon and trout species already listed. The additional listings, however, further reduce the chance that restrictions in the plan protecting these species' habitat will be lifted.

In addition, the pressure to maintain habitat on federal lands to protect threatened and endangered species is expected to grow. The Forest

Service and BLM are required by the National Environmental Policy Act to consider activities occurring on nonfederal lands in deciding which activities may occur on their lands. We believe this requirement, coupled with recent policy initiatives, means that federal lands will assume a growing proportion of the responsibility for protecting threatened and endangered species and that these species' habitats will increasingly be concentrated on Forest Service and BLM lands in the Pacific Northwest and elsewhere.

Additionally, the National Marine Fisheries Service and the Fish and Wildlife Service have incorporated a "no surprises" policy into habitat conservation plans under section 10 of the Endangered Species Act.[45] Under this policy, nonfederal landowners, in exchange for adopting a habitat conservation plan to protect threatened and endangered species, will be exempt from land-use restrictions and other mitigation measures affecting covered species beyond those restrictions and measures already addressed in the habitat conservation plan. If the status of the species unexpectedly worsens because of circumstances not addressed in the habitat conservation plan, the burden of imposing additional conservation measures would fall primarily on the federal government and on nonfederal landowners that have not developed a habitat conservation plan. There are about 3 million acres of nonfederal land under habitat conservation plans within the range of the northern spotted owl.

Finally, according to a recent report on the Northwest Forest Plan,[46] part of the administration's intent in developing a regional land management plan was to minimize the impact of protecting and recovering threatened and endangered species on nonfederal lands. Seventy-eight percent of the lands were either set aside for specific uses, such as recreation, or reserved to provide habitat for endangered and threatened species and other species dependent on late-successional forest for habitat. Timber harvesting on these lands is either prohibited or allowed only for stewardship purposes. Timber harvests for commercial purposes are allowed on the remaining 22 percent of the lands but are subject to management provisions. While these provisions are intended to preserve late-successional forests for habitat, they also have the effect of limiting timber harvests. If more late-successional acreage is preserved on federal lands, less must be preserved on nonfederal lands to provide sufficient habitat for endangered, threatened, and other species that depend on this type of forest for habitat. Essentially, the plan established a trade-off,

[45]63 Fed. Reg. 8859 (Feb. 23, 1998).

[46]J. Pipkin, The Northwest Forest Plan Revisited (Sept. 1998).

increasing habitat protection requirements and timber-harvesting restrictions on federal lands in order to increase the nonfederal acreage available for timber harvesting and other nonconservation uses.

Deficiencies in Developing a Management Plan for the Interior Columbia River Basin Have Resulted in Delays and Unfulfilled Promises

The development of a plan to manage about 72 million acres of federal land in the interior Columbia River basin is at a critical juncture. From the outset, the Forest Service and BLM have stated that a regional ecosystem management approach will cut the cost of amending federal land management plans in half because decisions will be made once for the region rather than for each federal land unit in the basin. However, after spending over 5 years and almost $41 million through fiscal year 1998, the agencies have still not made the necessary management choices and selected a management plan for the basin. The Forest Service and BLM estimate that they will need at least another $10.9 million to reach a decision in March 2000. One view expressed by both the public and some in the Congress is that funding for the effort should be terminated. According to some holding this view, the ecological and socioeconomic data that have been gathered and the analyses that have been performed should be forwarded to local Forest Service and BLM administrative units for the agencies to consider and use in revising their land management plans.

In developing a management plan for the interior Columbia River basin, the Forest Service and BLM have attempted to address ecological issues along the boundaries of natural systems rather than along the boundaries of administrative units and have worked to overcome some long-standing planning deficiencies. They have (1) worked in collaboration with other federal agencies, (2) offered many opportunities for public participation in the process, and (3) conducted a scientific assessment that has generated greatly improved ecological and socioeconomic data on the basin. However, developing the plan has taken far longer and cost far more than expected.

Some of the delays and higher costs occurred because the agencies significantly underestimated the time and effort required to address a multitude of ecological and socioeconomic issues and human activities at such a large geographic scale. Additional time and funds are being expended because the agencies decided to develop one or more new management alternatives in response to widespread criticism of their original draft alternatives from the public and the Congress. We believe that this criticism can be attributed, in part, to the failure of the agencies to limit their proposal to those issues that are appropriately addressed at the scale of the basin and to include for those issues the elements necessary for a successful ecosystem management plan. The agencies asked for comments on a draft management plan that spelled out the basic intent of seven different alternative strategies but that did not provide

adequate detail to determine how the strategies would be implemented or what effects they would have in particular locations. As a result, the Congress and other interested parties could not make informed choices among the alternatives. Moreover, as they did for the Northwest Forest Plan, the Forest Service and BLM overestimated the volume of federal timber to be harvested under their preferred land management alternative.

A Multistep Process Is Being Used to Develop a Management Plan for the Interior Columbia River Basin

The plan to manage federal lands in the interior Columbia River basin is being developed to avoid a conflict between consumption and conservation such as the one in the Pacific Northwest that led to injunctions against timber sales on federal lands. Table II.1 summarizes the major events in developing the plan.

Table II.1: Time Line of Major Events in Developing a Management Plan for the Interior Columbia River Basin

1993	July	The President directs the Forest Service to develop a scientifically sound ecosystem-based strategy for national forests in Oregon and Washington east of the crest of the Cascade mountain range.
1994	January	The Forest Service and BLM sign a charter expanding the scope of the strategy to include BLM lands in eastern Oregon and Washington.
	July	The Forest Service and BLM expand the scope of the effort to include the upper Columbia River basin in Idaho, Montana, Wyoming, Utah, and Nevada.
1996	June	The agencies issue a framework for ecosystem management in the project area.
	December	The agencies issue an integrated scientific assessment of the project area.
1997	May	The agencies issue a scientific evaluation of the potential effects of preliminary management alternatives.
	June	The agencies issue a more detailed scientific assessment of the project area.
	June	The agencies release for public comment a draft environmental impact statement for each of the two planning areas: eastern Oregon and Washington and the upper Columbia River basin, which together make up the interior Columbia basin. The comment period is to end October 6, 1997.
	September	The agencies extend the public comment period to February 6, 1998.
	December	The agencies extend the public comment period to April 6, 1998.
1998	March	In response to a congressional mandate, the agencies issue an analysis of the economic and social conditions of communities in the project area.
	March	The public comment period is extended to May 6, 1998, to allow time to review the March 1998 analysis of economic and social conditions.
	May 6	The public comment period ends. Nearly 83,000 comments were received.
	October	The agencies issue an analysis of public comments on the draft environmental impact statements.
	October 8	The Secretaries of Agriculture and the Interior announce their decision to present one or more new alternatives in a supplemental draft environmental impact statement sometime in mid-1999.
1999	September	A supplemental draft environmental impact statement is to be released for public comment.
2000	March	A final environmental impact statement and record of decision are to be issued.

In March 1993, environmental groups petitioned the Forest Service's Pacific Northwest (Region 6) office to revise its minimum management requirements for old-growth-dependent wildlife species on national forests in Oregon and Washington east of the crest of the Cascade mountain range

(the Eastside planning area). The petitioners claimed that the requirements in effect at the time, which were intended to ensure the continued viability of certain old-growth-dependent species, (1) lacked credibility and (2) had not been developed for other old-growth-dependent species that needed them. The petitioners also contended that the region had no alternative for the Eastside area but to adopt the type of large-scale planning done under court order in the range of the northern spotted owl. They requested a moratorium on timber harvesting and road building in the Eastside area's mature and old-growth forests.

In July 1993, the President directed the Forest Service to develop a scientifically sound ecosystem-based management strategy for the Eastside area's national forests. He also directed that the strategy be based on a forest health study that had been completed in May 1993 by a team of agency scientists, as well as other studies.

In January 1994, the Forest Service and BLM signed an "Eastside Ecosystem Management Project" charter that expanded the scope of the strategy to include all lands managed by BLM in eastern Oregon and Washington. The charter called for four products: (1) a framework for ecosystem management, (2) a scientific assessment of the interior Columbia River basin, (3) an environmental impact statement that presented a preferred alternative for managing Forest Service and BLM lands in eastern Oregon and Washington, and (4) a scientific evaluation of the management alternatives in the environmental impact statement. According to the agencies, the preferred alternative in the environmental impact statement should both restore degraded habitats and provide commodities to help support local communities.

In July 1994, the Forest Service and BLM expanded the scope of the planning effort to include the development of a strategy for managing federal lands in much of Idaho, western Montana, and small portions of Nevada, Wyoming, and Utah (the Upper Columbia River Basin planning area). The effort to develop management strategies for both the Eastside planning area and the upper Columbia River basin planning area is known as the Interior Columbia Basin Ecosystem Management Project.

Between May 1994 and July 1995, the Forest Service issued three interim management strategies. One established riparian, ecosystem, and wildlife standards for timber sales in eastern Oregon and Washington (the Eastside

Screens).[47] Another established requirements for managing anadromous fish[48] in eastern Oregon and Washington, Idaho, and portions of California.[49] The third established requirements for managing inland native fish.[50] The ecosystem management framework called for in the January 1994 charter was completed in June 1996.[51] It described the principles and the planning and analysis processes for managing ecosystems in the basin at multiple geographic scales and resolutions of data.

An integrated scientific assessment of the interior Columbia River basin was issued in December 1996.[52] A scientific evaluation of the seven land management alternatives contained in a February 1996 internal working draft of the environmental impact statement was completed in May 1997.[53]

In June 1997, the agencies released a more detailed version of the scientific assessment.[54] That same month, the Forest Service and BLM also issued two draft environmental impact statements for public comment (dated May 1997)—one for the Eastside planning area and another for the Upper Columbia River Basin planning area.

[47]Interim Management Direction Establishing Riparian, Ecosystem, and Wildlife Standards for Timber Sales, Forest Service (May 20, 1994; amended on June 5, 1995, and July 31, 1995).

[48]Anadromous fish (e.g., salmon and steelhead) hatch in freshwater, migrate to the ocean, mature there, and return to freshwater to reproduce.

[49]Implementation of Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California, Forest Service (Feb. 24, 1995). This strategy is known as PACFISH.

[50]Inland Native Fish Strategy, Forest Service (July 28, 1995). This strategy is known as INFISH.

[51]Richard W. Haynes, Russell T. Graham, and Thomas M. Quigley, tech. eds., A Framework for Ecosystem Management in the Interior Columbia Basin and Portions of the Klamath and Great Basins, Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-374 (Portland, Ore.: 1996).

[52]Thomas M. Quigley, Richard W. Haynes, and Russell T. Graham, tech. eds., Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin and Portions of the Klamath and Great Basins, Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-382 (Portland, Ore.: 1996).

[53]Thomas M. Quigley, Kristine M. Lee, and Sylvia J. Arbelbide, tech. eds., Evaluation of EIS Alternatives by the Science Integration Team, Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-406 (Portland, Ore.: 1997).

[54]Thomas M. Quigley, and Sylvia J. Arbelbide, tech. eds., An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins (vols. I-IV), Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-405 (Portland, Ore.: 1997).

The draft environmental impact statements are very similar to each other. Both addressed the environmental, economic, and social effects of seven different land management alternatives representing a wide range of management prescriptions. These alternatives included a preferred alternative to aggressively restore forest, rangeland, and watershed health through active management as well as alternatives to maintain the status quo, emphasize the production of goods and services, establish a system of reserves on federal lands within which management activities would be limited, and others.

The original closing date for public comments on the draft environmental impact statements was October 6, 1997. However, in September 1997, the comment period was extended to February 6, 1998, to give the public more time to review the voluminous documents. In total, the detailed scientific assessment, draft environmental impact statements, and associated documents ran to nearly 6,000 pages. In December 1997, the comment period was extended to April 6, 1998. Then, in March 1998, it was extended to May 6, 1998, to give the public time to review a report issued that month on the economic and social characteristics of the basin and the estimated effects of the seven different land management alternatives in the environmental impact statements on communities in the basin.[55] The report was prepared pursuant to the Department of the Interior and Related Agencies Appropriations Act of 1998 (P.L. 105-83).

In an October 8, 1998, letter to key members of the Congress, the Secretaries of Agriculture and the Interior announced that, because of widespread criticism of the June 1997 draft environmental impact statements by both the public and the Congress, the Forest Service and BLM would issue one or more new management alternatives in a supplemental draft environmental impact statement in mid-1999. According to the Secretaries' letter, the supplemental draft environmental impact statement would be followed by another public comment period. Agency officials have since told us that the supplemental draft environmental impact statement is to be released for public comment in September 1999 and a final environmental impact statement and record of decision are to be issued in March 2000.

[55]Nicholas E. Reyna, Richard H. Phillips, and Gerald W. Williams, Economic and Social Conditions of Communities: Economic and Social Characteristics of Interior Columbia Basin Communities and an Estimation of Effects on Communities from the Alternatives of the Eastside and Upper Columbia River Basin Draft Environmental Impact Statements, Interior Columbia Basin Ecosystem Management Project (1998).

Development of the Plan Has Addressed Some Long-Standing Decision-Making Deficiencies and Accomplished Some of the Steps Necessary for Ecosystem Management

In developing a management plan for the interior Columbia River basin, the Forest Service and BLM have attempted to address ecological issues along the boundaries of natural systems and have worked to overcome some of the long-standing deficiencies that have plagued federal land management decision-making. The agencies have (1) collaborated with other federal agencies, (2) involved the public in the decision-making process, and (3) conducted a scientific assessment to develop improved ecological and socioeconomic data on the basin. At the same time, the agencies have also taken some of the steps that we believe are necessary to implement ecosystem management.

Federal Agencies Have Coordinated the Planning Effort From the Beginning

The Forest Service and BLM are the lead agencies on the Interior Columbia Basin Ecosystem Management Project; however, the project has been a multiagency effort from the beginning. An executive steering committee has directed the project. The committee is composed of three Forest Service regional foresters, three BLM state directors, two Forest Service research experimental station directors, a deputy regional director of the Environmental Protection Agency, and regional directors of the National Marine Fisheries Service and the Fish and Wildlife Service.

The committee created an ad hoc interagency senior-level team of senior executives from the Forest Service, BLM, and three federal regulatory agencies—the Environmental Protection Agency, the Fish and Wildlife Service, and the National Marine Fisheries Service. This team's purpose was to ensure that the draft environmental impact statements complied at the basin scale with the requirements of the many relevant land management and environmental protection laws, including the National Forest Management Act, the Federal Land Management and Policy Act, the National Environmental Policy Act, the Endangered Species Act, the Clean Water Act, and the Clean Air Act. The draft environmental impact statements also called for the Forest Service and BLM to develop a memorandum of understanding with the three regulatory agencies that would facilitate collaboration in implementing the project.

Two separate groups have carried out the overall planning effort. One group—known as the Science Integration Team—was responsible for developing three of the four products called for in the January 1994 charter—the framework for ecosystem management, the scientific

assessment of the interior Columbia River basin, and the scientific evaluation of the management alternatives in the draft environmental impact statements. The other group—known as the Environmental Impact Statement Team—is responsible for developing the two environmental impact statements. Both groups are interdisciplinary and interagency teams of biologists, botanists, geologists, economists, sociologists, and others. They have consisted primarily of Forest Service and BLM staff but have also included representatives from the Environmental Protection Agency; Interior's U.S. Geological Survey, National Biological Service,[56] Fish and Wildlife Service, and Bureau of Mines; Commerce's National Oceanic and Atmospheric Administration and National Marine Fisheries Service; and universities. Other cooperating agencies include the National Park Service, the Bureau of Reclamation, and the Bonneville Power Administration.

The vast majority of the project's costs have been borne by the Forest Service and BLM, but other agencies have also contributed staff and resources. The Forest Service spent about 85 percent and BLM about 15 percent of the nearly $41 million spent by those two agencies on the project as of the end of fiscal year 1998. In addition, the Environmental Protection Agency estimates that it spent $487,600 on the project between fiscal year 1994 and January 1998, primarily for salaries. The Fish and Wildlife Service estimates that it has spent about $250,000 per year on developing the plan since fiscal year 1995.

The Public Has Participated Since the Planning Effort Began

The public has had many opportunities to participate in the planning process. Before developing the draft environmental impact statements, the Environmental Impact Statement Team held scoping meetings in dozens of locations with members of the public to identify issues and concerns associated with the lands managed by the Forest Service and BLM. While developing the draft environmental impact statements, the team held over 200 informational meetings, briefings, and consultations. Nearly 83,000 citizens; advocacy groups; corporations; and federal, tribal, state, and local agencies commented on one or both of the draft environmental impact statements. An independent team of natural resource professionals from the Forest Service and BLM prepared a content analysis of those

[56]In 1996, the National Biological Service became the Biological Resources Division of the U.S. Geological Survey.

comments,[57] and the Environmental Impact Statement Team will consider them in preparing the supplemental draft environmental impact statement.

According to the content analysis of the public comments on the draft environmental impact statements, "many are frustrated with the process for public collaboration and suspect their input is not being considered by government decision-makers." However, as we have observed in reviewing other federal land management planning efforts, while the benefits of working together cooperatively often outweigh the costs of early and continuous public involvement, dissatisfaction with the agencies' process for public involvement often cannot be dissociated from dissatisfaction with the outcome of the process. Thus, some parties opposed to the preferred management alternative in the draft environmental impact statements—which would aggressively restore forest, rangeland, and watershed health through active management but not emphasize the production of goods and services—may be expressing dissatisfaction with the agencies' process for public involvement. These parties may also be expected to avail themselves of statutory or regulatory opportunities for administrative appeal and judicial review if they are similarly dissatisfied with the management alternative or alternatives scheduled to be presented in the supplemental draft environmental impact statement.

Efforts Are Under Way to Collect and Use Comparable Data

The scientific assessment of ecological and socioeconomic systems and conditions in the basin greatly contributed to data comparability for the basin. The Science Integration Team assembled over 170 "data layers," or maps, of particular variables, such as vegetation types, grizzly bear range, employment, and income. These data are stored in geographic information systems and can be retrieved not only by federal land managers at the forest or district level but also by the public. As a result, pertinent information—which is not restricted to the agencies' administrative boundaries or jurisdictions—can be used for decision-making by many levels of government. Despite these benefits, many of the comments on the draft environmental impact statements criticized the uses of data from the scientific assessment.

[57]Final Analysis of Public Comment for the Eastside and Upper Columbia River Basin Draft Environmental Impact Statements, Content Analysis Enterprise Team (1998).

Development of a Management Plan for the Interior Columbia River Basin Followed the First Practical Steps in Implementing an Ecosystem Approach to Federal Land Management

In addition to addressing several long-standing planning deficiencies, the Forest Service and BLM are using an approach in the interior Columbia River basin that is consistent with the first two practical steps needed to implement ecosystem management (see fig. I.1). They have (1) delineated ecosystems at several geographic scales based on watersheds and (2) conducted a scientific assessment to better understand the ecosystems' ecologies. The agencies are now in the process of completing the third step—making management choices. They have also acknowledged the importance of the fourth step—adaptive management—and have proposed monitoring steps to determine whether the plan's management direction is being followed (implementation monitoring) and whether the plan is accomplishing the desired conditions (effectiveness monitoring).

In the past, when the Forest Service and BLM developed a separate land management plan for each of their administrative units, they produced 74 separate land management plans for the basin. In developing a basinwide plan, the agencies recognized that decision-making at the level of an administrative unit resulted in a fragmented and, perhaps, inconsistent approach to addressing many of the broader-scale ecological issues that transcend the boundaries of national forests and BLM districts. Therefore, as is consistent with the first practical step of ecosystem management, they are using watersheds at three different geographic scales as the plan's building blocks. The broadest scale is essentially the basin itself, which encompasses about 144 million acres and contains about 75 million acres of federal land managed by the Forest Service or BLM.[58] The basin was then divided into 164 subbasins averaging 800,000 to 1,000,000 acres in size, over 2,000 watersheds averaging 50,000 to 100,000 acres, and over 7,000 subwatersheds averaging 15,000 to 20,000 acres.

Under the second practical step of ecosystem management, the scientific assessment—completed at a cost of about $22.7 million—has provided extensive knowledge of the interior Columbia River basin. The initial integrated assessment examined past and present biophysical (i.e., aquatic, terrestrial, and landscape), social, and economic systems on all lands in the basin regardless of ownership and discussed the probable outcomes of the agencies' current management practices and trends. An expanded version of the assessment provided more detail on terrestrial, aquatic, landscape, economic, and social conditions in the basin.

[58]The draft management plans address 72 million of the 75 million acres.

Delays and Increased Costs Can Be Traced Primarily to the Magnitude of the Effort and the Failure to Present an Adequate Draft Plan

The delays and increased costs that have been and will be incurred to develop a plan to manage federal lands in the interior Columbia River basin can be traced primarily to two factors. First, the Forest Service and BLM significantly underestimated the time and effort required to address the multitude of ecological and socioeconomic issues and human activities that they considered for an area encompassing roughly 8 percent of the United States. Second, the management plan that the agencies proposed in June 1997 was widely criticized, and, as a result, they are spending additional time and money developing a new approach for the basin that will yield one or more new management alternatives.

Some criticism of the original proposal focused on the agencies' decision to address issues that were not basinwide in nature. We also believe that although the agencies presented alternatives in June 1997 that reflected different management strategies, they did not clearly identify how the alternatives would be implemented or what their consequences would be in particular locations. These are elements that we believe are necessary for a successful ecosystem management plan. Without this information, the Congress and other interested parties could not make informed choices among the proposed management alternatives. Moreover, without this specificity, the chosen management alternative would have been difficult, if not impossible, for federal land managers to implement, monitor, evaluate, and be held accountable for.

The Size and Scope of the Project Led to Unanticipated Delays and Costs

The broad geographic scope of the planning area, coupled with the multitude of issues and activities that the agencies decided to address, presented the agencies with a daunting challenge in developing a plan to manage federal lands in the interior Columbia River basin. Reviewing the draft proposal also posed a challenge to the public that the agencies acknowledged by extending the original 120-day comment period to 330 days. As is clear, the Forest Service and BLM underestimated the overall time and effort that would be required to develop a plan.

The scope of the effort has included a multitude of ecological and socioeconomic issues affecting both forests and rangelands. For example, the scientific assessment and draft plan have addressed not just old-growth-dependent species, but other endangered and threatened species—such as anadromous fish (including salmon) and the grizzly bear—with different and/or more extensive habitat requirements. They have also addressed issues such as costly outbreaks of wildfires, insects, and diseases; invasions of exotic weeds; declines in soil fertility and water

and air quality; wilderness preservation; mounting legal challenges; and unpredictable flows of commodities such as timber and livestock forage.

As the issues increase, so too do the number of human activities that need to be addressed in developing a management plan to restore the health of forests and rangelands in the basin. The scope of the assessment included not only timber harvesting and road building, but also fire suppression; livestock grazing; mining; damming and water diversions; agricultural, industrial, urban, and residential development; and the deliberate or accidental introduction of nonnative plants, insects, and diseases.

Because the basin is so large and so many issues are being addressed, the process is taking much longer and costing much more than anticipated. For instance, in 1994, when the Forest Service and BLM added the Upper Columbia River Basin planning area, they doubled the geographic scope of the planning effort. (See fig. 1.) The charter called for the draft environmental impact statement for the Eastside planning area to be completed by January 1995. In April 1995, after the agencies decided to do an environmental impact statement for the upper Columbia River basin planning area, the Chief of the Forest Service announced that the draft statements would be issued in the fall of 1995. The date for issuing the draft statements was later postponed to August 1996, and the statements were finally released in June 1997. The public comment period for the draft statements was originally 120 days, but the agencies ultimately extended it to 330 days to give people time to review the volumes of scientific data and wide-ranging management alternatives.

The budget for the project has also grown since it started. The initial estimated cost for the assessment and the Eastside management plan was $5 million. In 1995, the agencies stated that the 3-year budget (through fiscal year 1996) for the expanded project area was $31 million. As of the end of fiscal year 1998, the Forest Service and BLM had spent nearly $41 million.

Criticism of the Draft Plan Led to a Decision to Prepare a Supplemental Draft Environmental Impact Statement

Faced with widespread criticism over the agencies' preferred alternative in the draft plan, the Secretaries of Agriculture and the Interior wrote to Members of Congress in October 1998 that they would "pursue alternative proposals to meet the interests and concerns of the public" and present them in a supplemental draft environmental impact statement. This effort will add time and costs to the project. The agencies now expect to issue the supplemental statement in September 1999 and anticipate that a final

plan will be approved in March 2000. The fiscal year 1999 budget for the project is $5.7 million (some of which would have been needed even without the decision to prepare new alternatives). According to the project team, another $5.2 million will be needed in fiscal year 2000 to complete the plan.

Criticism of the original proposal was, indeed, widespread, coming from environmental organizations and conservationists, resource-based industries, local and tribal governments, and federal agencies. The nature of the criticism was also broad. The public critiqued, among other things, (1) the feasibility of trying to develop a management plan at the scale of the basin for the issues that the agencies addressed; (2) the clarity and specificity of the proposed management direction; (3) the range of the proposed alternatives; (4) the quantity, quality, and interpretation of scientific data; (5) the depth of coverage of specific issues; and (6) the projected outcomes of the preferred alternative.

While much of the criticism could have been anticipated, given the controversial nature of the issues, the first two categories of criticism relate to how the agencies handled the first and third steps of ecosystem management. As shown in fig. I.1, the first step toward ecosystem management is to delineate the boundaries of ecosystems at several geographic scales across which consistent management can be applied. As part of that step, we believe that it is also necessary to identify the issues that are appropriately addressed at those scales. In their original draft proposal, the agencies did delineate ecosystems at different scales and attempted to address both basinwide and subbasin issues. In their October 8, 1998, letter to key Members of Congress, the Secretaries of Agriculture and the Interior stated that the new management alternative(s) in the supplemental draft environmental impact statement and record of decision would focus on the limited number of issues that must be resolved at the basin level. Issues that are subbasin in scale will be addressed through other planning efforts.

The letter stated that the new Interior Columbia Basin Ecosystem Management Project's approach would include basinwide direction built around four basic components: aquatic habitat; terrestrial species habitat; landscape health; and human needs, products, and services. According to the letter, the aquatic and terrestrial approach will attempt to protect wide-ranging species, such as anadromous fish, lynx, and wolverine, by ensuring that adequate habitat is available across administrative units. The aquatic strategy will also address basinwide considerations that arise from

the agencies' responsibilities under the Clean Water Act. The needs of plants and animals with smaller ranges will be addressed at the most appropriate geographic scale. By reducing the number of issues covered by the proposal, the agencies may either address or make moot some of the public criticism. For example, criticism of how the original version addressed a particular sensitive species that has a small range would not be relevant under a new approach that does not attempt to address that species' needs.

As of February 1999, the planning effort's Environmental Impact Statement Team was sorting out the issues that should be addressed in the basinwide supplemental draft environmental impact statement from those that should be addressed later at the subbasin and watershed scales. According to these officials, issues that are not basinwide but that extend beyond the boundaries of national forests or BLM units will be addressed by adjacent units working together. They had not decided how the agencies would oversee the plan's implementation to determine whether the basinwide management direction was being followed and whether it was accomplishing the desired conditions.

Some of the public comments, as well as our observations, suggest that the agencies did not complete the third step of ecosystem management for certain issues. The third step is to make management choices that identify (1) the desired future ecological conditions; (2) the type, level, and mix of activities needed to meet those conditions; and (3) the distribution of activities among land units over time. While the June 1997 proposal articulated the broad strategic differences among the proposed management alternatives, it did not provide detailed information on the desired future conditions, activities, and distribution of activities for each one. Without such detailed information for each of the alternatives, stakeholders cannot readily associate particular ecological outcomes and economic outputs with each one, and analyses of the alternatives must be based on their intent, rather than on specific expected results.

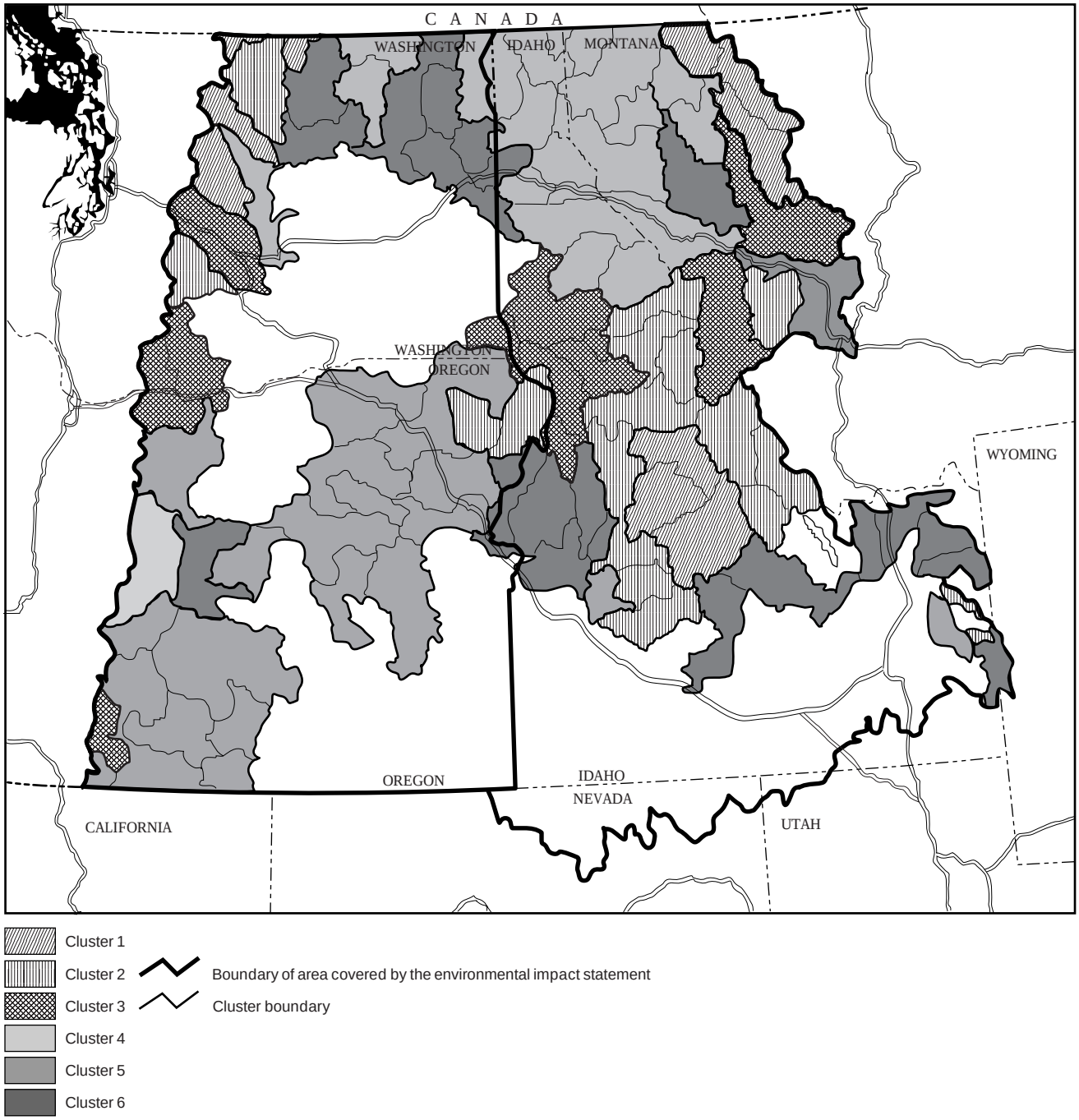
For example, the draft environmental impact statements included "desired ranges of future conditions" that could be expected in 50 to 100 years if the management direction specified in an alternative were implemented. The draft environmental impact statements specified management direction through objectives and standards. Objectives are indicators used to measure progress toward achieving a desired future condition and are designed to be accomplished in 10 years. Standards are requirements to act or refrain from acting in a way intended to achieve the

objectives. Collectively, the objectives and standards should identify the activities that are required, allowed, or restricted on federal lands in the basin.

According to one description in the draft environmental impact statements of a desired range of future economic conditions, "Economic activity is generated in rural communities, including private sector employment, government agency employment, income, number of recreation visits, and revenues shared with local governments." An indicator to measure progress toward achieving these conditions states that the agencies' objective is to "derive social and economic benefits, promote commercial activity, and foster demand for labor and capital formation through producing a mix of goods and services." Most, if not all, of the seven land management alternatives in the draft environmental impact statements would have met these desired economic conditions and this objective. However, the level of economic activity generated in rural communities under each of the alternatives could have varied significantly.

The level of economic activity generated in rural communities under each of the alternatives in the draft environmental impact statements could also have varied significantly with the activities that would have been required, allowed, or restricted on particular national forests or BLM districts. For instance, the Northwest Forest Plan allocated the estimated level of potential timber sales over the first 10 years of the plan among the national forests and BLM districts covered by the plan. Thus, individuals, companies, and communities economically dependent on these lands had an expectation about the future availability of timber from them, and federal land managers could plan and be held accountable for meeting these targets. Conversely, the draft environmental impact statements for the interior Columbia River basin allocated estimated potential timber sales and other activities to noncontiguous, but ecologically similar, "clusters" of forests and rangelands scattered throughout the basin. (See fig. II.I for the boundaries of forest clusters.) The draft environmental impact statements did not, however, identify where in each cluster an activity would likely occur. Without knowing the estimated levels of potential timber sales and other activities on national forests or BLM districts, those economically dependent on the forests or districts did not have an adequate understanding of how much economic activity might be generated at the local level by federal timber sales and other activities.

Figure II.1: Forest Clusters in Lands Within the Boundaries of the Interior Columbia River Basin Project Area



(Figure notes on next page)

Note: The lands in the project area that are not shaded are dominated by range ecosystems rather than forests. The agencies also divided these areas into noncontiguous range clusters.

Source: Interior Columbia Basin Ecosystem Management Project.

According to the analysis of public comments, many were critical of the how complete the agencies were in making management decisions about ecological issues as well. Many commented that the objectives and standards for management activities were inconsistent, were too vague to be quantified or measured, or lacked time frames and locations. For example, one professional society wrote that many contradictory goals and directions exist and that it was not clear who would decide which way to go when trade-offs are necessary. The Fish and Wildlife Service wrote that the restoration direction in the preferred alternative was not clearly developed into a strategy that included guidelines, time frames, and measurable objectives. The Service went on to say that much more information was needed on the actions for carrying out the restoration, how it would be implemented, and how progress and compliance would be measured. Another theme of the comments was that watershed management activities must be more clearly defined so that the public can understand what activities will result from a decision. According to the summary, most comments on specific wildlife habitat issues noted that the public and wildlife would benefit from clearer, more precise, and more accurate descriptions of the proposed management. With respect to management for viable populations of wildlife, many commented that there was little difference among the objectives, standards, and guidelines for the different alternatives, making it difficult to determine whether the standards and guidelines could achieve the intended differences.

The agencies announced their intent to limit the focus of the revised alternatives to issues that are basinwide in scale. However, the Secretaries' letter to Members of Congress also indicated that the revised alternatives would contain only general guidance on some of those issues. For example, the letter said that landscape health issues, such as the rapid spread of noxious weeds and the potential for costly and dangerous fires, would be addressed though general objectives and guidance and that the specific design for on-the-ground activities would be appropriately addressed at the subbasin or local level. We are concerned that general guidance will not be adequate to provide the necessary standards of accountability for land managers, the Congress, or the public. Furthermore, it is possible that general guidance on basinwide issues will

not provide these stakeholders with the clear and well-defined management alternatives they expect. For example, project managers told us in January 1999 that they had not decided whether the supplemental environmental impact statement would contain an estimate of commodity levels under the new alternatives. This was reiterated in the comments on our draft report made by the Interior Columbia Basin Ecosystem Management Project's Executive Steering Committee when it wrote that specific prescriptions related to such things as timber harvest and grazing levels would not be appropriate at the scale of the basin.

The public is accustomed to Forest Service and BLM land management plans that provide a high level of detail on land allocations, project activities, and commodity outputs. The directors of the interior Columbia River basin project have told us that it is not possible to provide for the entire basin the level of detail that one might expect for a national forest. What is possible, they say, is to make basinwide decisions about management strategies and then make more refined decisions at a smaller scale.

Indications from the October 8, 1998, letter, however, are that the revised proposal will provide less rather than more detail on management steps and outcomes. If so, to limit criticism such as they received on the original proposal, the agencies must make it clear that the purpose of the project is to decide on a broad strategy for management in the basin—whether that strategy be active management, letting nature take its course (passive management), or emphasizing commodity production—and that they cannot produce a plan for this scale that is as detailed as a plan for a single administrative unit.

If the purpose of the revised proposal is to present broad alternative strategies, two other observations are relevant. First, the Chief of the Forest Service has often stated over the last 2 years that the agency's primary goal is to maintain or restore the health of the land and that active management is necessary to achieve this goal. A decision that would not do much more than adopt active management as the strategy for the interior Columbia River basin, therefore, would not represent a significant advancement. Second, if fewer decisions are made at a basinwide level, more decisions must be made at a subbasin level. As the balance shifts toward local decision-making, the amount of time and money required to complete individual unit management plans, as well as to complete the overall planning process for lands in the basin, will increase.

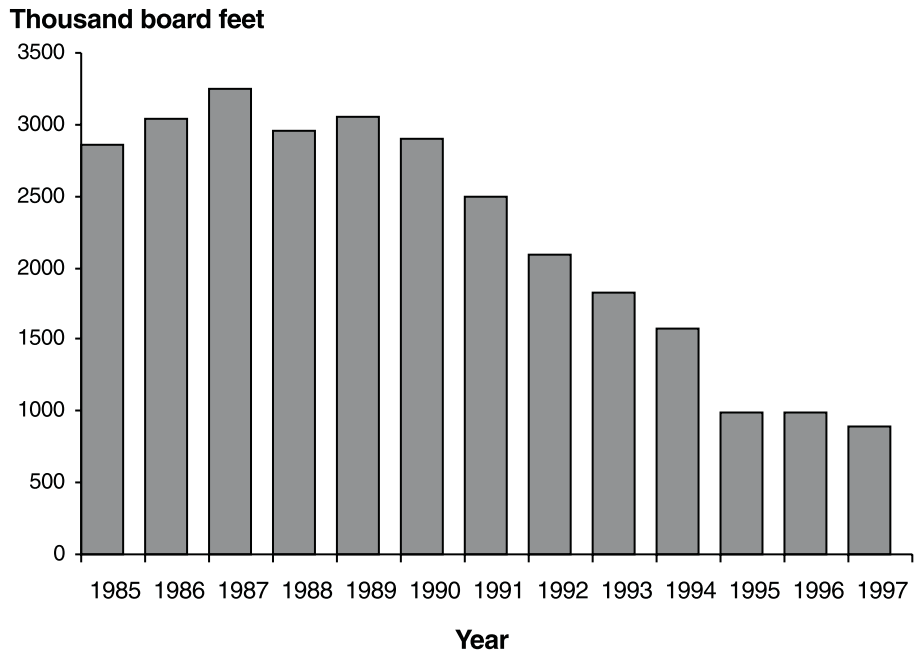
The Quantity and Quality of Federal Timber in the Interior Columbia River Basin Will Continue to Decline

Besides not providing the specific information decisionmakers needed to make informed choices among the seven different land management alternatives, the draft environmental impact statements overestimated the volume of federal timber to be harvested under the preferred land management alternative. As a result, the Forest Service and BLM created unrealistic expectations, and the Congress and other interested parties were asked to make choices on the basis of incorrect information about the alternative's ability to generate economic activity within the basin.

The Volume of Timber Harvested Has Decreased Significantly

The volume of timber harvested from federal lands in the interior Columbia River basin has declined steeply since fiscal year 1990 following years of high output. Timber harvests on federal lands in the basin reached historically high levels in the late 1980s. The Forest Service and BLM harvested an average of just over 3 billion board feet from fiscal year 1985 through fiscal year 1990. Timber harvests on these lands declined steeply starting in fiscal year 1991, averaging just over 1.5 billion board feet from fiscal year 1991 through fiscal year 1997, with the lowest volumes occurring in the most recent years. (See fig. II.2.) This decline can be attributed to the three interim strategies (PACFISH, INFISH, and the Eastside Screens), requirements in planning and environmental laws, and changes in public values and the agencies' mission and funding priorities.

Figure II.2: Volume of Timber Harvested From Forest Service and BLM Units Entirely Within the Interior Columbia River Basin, Fiscal Years 1985-97



Source: Interior Columbia Basin Ecosystem Management Project.

The Quality of Timber Harvested on Federal Lands in the Basin Will Decline

In the draft environmental impact statements, the Forest Service and BLM cautioned that trees would have been harvested under their preferred management alternative primarily to restore the health of forest ecosystems rather than to produce wood fiber. As a result, the trees would have been small in diameter and would have had less commercial value.

For example, timber stands would have been selected for harvesting or thinning to reduce the dense growth that makes small trees susceptible to insects, diseases, or catastrophic wildfires.[59] Or, timber would have been harvested from the ecologically undesirable even-age tree stands often planted after clear-cutting. In addition, the preferred alternative would have required that a specified number of large trees be left standing.

[59]See Thomas M. Quigley, Kristine M. Lee, and Sylvia J. Arbelbide, tech. eds., Evaluation of EIS Alternatives by the Science Integration Team, Vol. 1, Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-406 (Portland, Ore.: 1997) and Western National Forests: Catastrophic Wildfires Threaten Resources and Communities (GAO/T-RCED-98-273, Sept. 28, 1998).

The Forest Service and BLM Overestimated the Volume of Federal Timber to Be Harvested Under Their Preferred Alternative

According to the Forest Service and BLM, the preferred management alternative in the draft environmental impact statements—which, they said, would have aggressively restored forest, rangeland, and watershed health through active management—would have reversed the trend of declining timber harvests on federal lands in the basin. Data on recent timber harvests that we obtained from the agencies, which were not included in the draft environmental impact statements, showed that, according to the Forest Service and BLM, the volume of timber that would have been harvested from federal lands in the basin under the preferred alternative would have exceeded by 81 percent the volume harvested in fiscal years 1996 and 1997 under the three interim management strategies. However, our review indicates that the agencies overestimated the volume of federal timber to be sold under their preferred management alternative, just as they did under the Northwest Forest Plan.

Under their preferred alternative, the Forest Service and BLM estimated that an average of about 1.7 billion board feet per year would have been harvested over the first 10 years of plan. Other alternatives, including the one that emphasized the production of goods and services, would have yielded even higher volumes of timber. However, federal regulatory agencies have expressed concern, as they have for other planning efforts, that the preferred alternative's emphasis on active management would have caused unacceptable environmental consequences.[60] In addition, as the Forest Service did in developing some of the first forest plans,[61] the Forest Service and BLM developed the management alternatives without reference to likely funding levels.[62] The agencies' preferred alternative and their estimate of timber output were predicated on a significant increase in appropriated funds, which they are not likely to receive. The regulatory agencies' concerns and fiscal constraints would have reduced the volume of federal timber to be harvested under the preferred management alternative.

Projections of the volume of timber to be harvested from federal lands in the basin may also be reduced in response to new information and events. Legislative requirements to consider new information and events, such as

[60]See, for example, Tongass National Forest: Lack of Accountability for Time and Costs Has Delayed Forest Plan Revision (GAO/T-RCED-97-153, Apr. 29, 1997) and Forest Service Decision-Making: A Framework for Improving Performance (GAO/RCED-97-71, Apr. 29, 1997).

[61]Forest Service: Issues Related to Managing National Forests for Multiple Uses (GAO/T-RCED-96-111, Mar. 26, 1996).

[62]In their October 8, 1998, letter to Members of Congress, the Secretaries of Agriculture and the Interior said they had asked the regional executives to develop a plan that can accommodate a range of funding levels for Congress and the administration to consider.

the listing of a new species under the Endangered Species Act, have made it difficult for the Forest Service and BLM to predict when any decision can be considered final and can be implemented, reducing the agencies' ability to achieve the objectives in their plans.[63]

Federal Regulatory Agencies Were Critical of the Preferred Alternative

Although the Forest Service and BLM are responsible for managing their lands to sustain multiple uses, including timber production, federal regulatory agencies are responsible for implementing and enforcing environmental laws and regulations on those lands. Because of their disparate missions and responsibilities, federal regulatory agencies sometimes disagree with federal land management agencies on an acceptable level of risk to individual natural resources and on the best approaches for achieving environmental objectives.

Failure to reach agreement with the federal regulatory agencies almost certainly ensures that a plan will not be implemented. In particular, the Fish and Wildlife Service and the National Marine Fisheries Service will formally consult with the Forest Service and BLM under section 7 of the Endangered Species Act before any decision is reached on a basinwide plan. If the regulatory agencies find that the proposed management alternative does not meet the requirements of the Endangered Species Act, they will issue a jeopardy opinion—an opinion that asserts that the alternative would appreciably reduce the likelihood of a listed species' survival and recovery. The issuance of a jeopardy opinion would effectively prevent the plan from being implemented as proposed.

In commenting on the draft environmental impact statements, three federal regulatory agencies—the National Marine Fisheries Service, the Fish and Wildlife Service, and the Environmental Protection Agency—expressed concern that the management alternative preferred by the Forest Service and BLM would not adequately protect species' habitat, water quality, or other natural resources and would therefore not meet the minimum requirements set by such laws as the Clean Water Act and the Endangered Species Act. The planning effort's interdisciplinary and interagency Science Integration Team, although not possessing the authority of the regulatory agencies, raised similar concerns about the preferred alternative.

The three federal regulatory agencies and the Science Integration Team criticized the assertion by the Forest Service and BLM that active

[63]Forest Service Decision-Making: A Framework for Improving Performance (GAO/RCED-97-71, Apr. 29, 1997).

management could continue at current or higher levels. They were concerned that the high level of activity being proposed, even if done in the name of ecological restoration, would have unacceptable consequences on species' habitat and water quality.

For instance, the Science Integration Team wrote, in discussing the need for active versus passive restoration, that "there are instances where long-term benefits [of active restoration] may not exceed short-term environmental costs or adverse ecosystem impacts, making a passive restoration approach more appropriate." One consequence of less emphasis on active management and more emphasis on passive management would be less timber sold. (Other consequences, according to the agencies, would be fewer activities such as prescribed burning and noxious weed treatment.)

The National Marine Fisheries Service expressed concern that efforts to restore lands above valley floors and streams (upland areas), which would include timber harvesting, would further degrade already degraded aquatic ecosystems and would likely cause further extinction of aquatic species. The Environmental Protection Agency expressed concern that "aggressive restoration" under the agencies' preferred alternative would likely cause road construction and logging in otherwise roadless areas that provide habitat for many different species. The agency commented that such restoration could pose "a significant risk to aquatic and terrestrial resources—both in the short and long term." The Fish and Wildlife Service commented that the alternatives did not "adequately address recovery of listed species, nor preclude the need for future listings in context with land management."

The regulatory agencies proposed specific changes to the preferred management alternative that would have restricted commodity production. For example, the Fish and Wildlife Service recommended that a particular standard be modified to protect additional large-diameter Douglas fir trees. The National Marine Fisheries Service recommended that the preferred alternative be amended to restrict timber harvesting in a larger portion of riparian areas and old-growth forests. The agency also commented that the preferred alternative attempted to meet only the minimum requirements for listed and sensitive species and that managing to these "lower limits" was not acceptable. Reducing the acreage available for timber harvesting and reducing the risk to listed and sensitive species would result in less timber being sold.

Budgetary Constraints Will Limit the Volume of Timber to Be Sold or Harvested

Because the trees to be harvested under the preferred management alternative often would have had low or no commercial value, the revenue generated from them would not have covered the costs of their removal. For instance, while pointing out that small-diameter trees have become much more prevalent in today's forests, the Science Integration Team observed that the trees would be difficult for the agencies to sell, particularly if the alternative required expensive logging methods, such as removing trees with helicopters rather than trucks, to reduce the impact of logging on the lands. The project team estimated that the agencies would need significant additional appropriations to implement the preferred alternative's active restoration approach.

The Forest Service and BLM estimated in 1997 that fully funding the preferred alternative's implementation would cost approximately $268 million per year. Funding at this level would require federal land management and regulatory agencies to obtain an increase in current funding levels of about $137 million, or about twice their current levels for the sort of work described in the draft environmental impact statements.

We believe that the costs of aggressively restoring forest, rangeland, and watershed health through active management, as the Forest Service and BLM originally proposed, would be likely to require even more appropriated funds than the agencies estimated. For example, agency officials and outside analysts agree that one restoration activity—harvesting small-diameter trees to reduce the risk of catastrophic wildfire—may require hundreds of millions of dollars a year in appropriated funds.[64] Our preliminary analysis of the Forest Service's fuel reduction costs indicates that about $725 million a year may be needed through fiscal year 2015 to treat the 39 million acres in the interior West at high risk of uncontrollable wildfire. The interior Columbia River basin falls completely within the interior West and contains a significant portion of the 39 million acres at high risk.

At a May 15, 1997, congressional hearing, the Chairman of the Subcommittee on Interior and Related Agencies, Senate Committee on Appropriations, informed the Forest Service and BLM that it would be virtually impossible to come up with the money needed to implement the preferred management alternative. Other members of the Senate Committee on Appropriations also expressed reservations about the

[64]Western National Forests: A Cohesive Strategy Is Needed to Address Catastrophic Wildfire Threats (GAO/RCED-99-65, Apr. 2, 1999).

future availability of appropriated funds to implement the agencies' preferred alternative.

The Fish and Wildlife Service and the Environmental Protection Agency have also raised doubts about the availability of funds. In commenting on the draft environmental impact statements, the Fish and Wildlife Service recommended "that continued effort to define and implement a selected alternative be based on reasonably predictable human and fiscal resources." The Environmental Protection Agency commented that "given the large increase in projected restoration activities, there is some question as to whether full implementation is possible under current funding levels, as assumed in the [draft environmental impact statements]."

The draft environmental impact statements did not assess the impact of lower funding levels on environmental restoration, commodity production, or local economic activity. However, the Forest Service and BLM estimated that about 45 percent of their costs to implement the preferred alternative would have been for timber harvesting. Therefore, less than full funding would probably have reduced the volume of timber sold or harvested.

New Information and Events May Reduce the Volume of Timber Sold

As has occurred in the Pacific Northwest, the volume of timber to be sold from federal lands in the basin may also be reduced in response to new information and events. Additional species could be listed as endangered or threatened, or habitat deemed critical to listed species' protection could be designated, under the Endangered Species Act. Additional agreements with nonfederal landowners could be signed that would require federal lands to assume more responsibility for protecting wildlife and fish. Additional analyses and assessments at the subbasin and watershed levels could reduce the acreage available for multiple uses. Finally, additional lands could be set aside for conservation—as wilderness, wild and scenic rivers, national monuments, and recreational areas. Any one of these events could reduce the agencies' ability to achieve the commodity objectives in their plan.

Comments From the Northwest Forest Plan's Regional Interagency Executive Committee

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

REGIONAL INTERAGENCY EXECUTIVE COMMITTEE
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April 5, 1999

Barry T. Hill
Associate Director
Resource, Community, and
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General Accounting Office
Washington, D. C. 20548

Dear Mr. Hill:

On behalf of the Regional Interagency Executive Committee, I appreciate the opportunity to provide you the interagency comments on the General Accounting Office's (GAO) draft Report entitled "*Ecosystem Planning, Northwest Forest and Interior Columbia River Basin Plans Demonstrate Improvements in Land Use Planning*." It is our understanding from your correspondence with Don Knowles of the Regional Ecosystem Office (REO) that the portion of the GAO draft report concerning the Interior Columbia River Basin Project is being reviewed in a separate process. Therefore, the comments provided in this memorandum concern only the portion of the GAO draft report that addresses implementation of the Northwest Forest Plan (NFP).

Our review of the GAO draft report was conducted in an interagency and interdisciplinary fashion. Through the assistance of the REO, we have provided the opportunity for agency review and comment from the following agencies: the Forest Service, Bureau of Land Management, National Marine Fisheries Service, U.S. Fish and Wildlife Service, Environmental Protection Agency, Bureau of Indian Affairs, U.S. Geological Survey, U.S. Army Corps of Engineers, and Forest Service, Pacific Northwest Research Station. The Regional Executives from these agencies were pleased with your request for an interagency review because it models our successful collaboration as interagency partners. The following are general comments provided by the Regional Interagency Executive Committee. Additional detailed comments from the interagency review are provided in Enclosure 1.

We concur with your findings in the draft report on pages 3-4 that the NFP has addressed many longstanding deficiencies that the agencies have had with prior planning efforts. Indeed, we think Federal collaboration (and intergovernmental coordination) have significantly improved as a result of the agreements reached and the processes followed pursuant to the Memorandum of Understanding for implementing the NFP. We have also improved our efforts at public involvement, data collection and analysis, and monitoring. However, we feel that the draft report could be improved in its analysis and discussions of Federal timber sales under the NFP. We recognize the challenge you faced in evaluating the NFP and its effects on several indicators such as timber sales, ecosystem function and sustainability, and social and cultural effects. We faced similar challenges during development and implementation of the NFP.

See comment 1.

We would suggest that the emphasis placed on the timber program be matched with an equal emphasis on other components of the NFP such as; the implementation of the Aquatic Conservation Strategy, worker and community assistance, implementation and effectiveness monitoring, and interagency

coordination and collaboration. The accomplishments and achievements in these areas are significant and our hope is that they are recognized in the final report with the same level of importance as the timber program. Otherwise, it appears that the timber program becomes the primary yardstick against which to measure the NFP. For example, the draft report cites dramatic changes in the timber program (such as decreased timber quantity/quality and increased costs) without corollary statements of improved ecosystem sustainability, healthier forests, and cleaner water as public benefits. These other benefits are vital to long term health of the region.

See comment 2.

We also suggest that you consider changing the baseline used for comparing current year timber sales to prior year timber sales. The result of prior year sales levels were injunctions, whereas the estimated annual sales levels associated with the NFP provide for ecological sustainability. Current year sale levels need to be compared to several benchmarks in order to develop a full appreciation for the NFP and its implementation. Finally, the discussion concerning timber quality needs some additional clarification. Global competition over the past decade has led to improvements in technological development that need to be recognized. As the supply of large diameter logs has been replaced by smaller logs, mills have evolved to emphasize processing of smaller diameter wood.

See comment 3.

We agree with your assumption that program costs will likely continue to increase. This will be due in part to new survey and manage protocols now being developed, legal and administrative challenges to the NFP, new listings under ESA and subsequent consultation requirements, and other related public land management costs. However, efficiencies achieved under the NFP will continue to moderate the increases. Examples include completed watershed and late-successional reserve analysis that can be added to rather than starting over, progress in completing required surveys, and improved co-ordination among Federal agencies including ESA related consultation.

Thank you for the opportunity to provide these comments. Should you have any questions please contact me or Don Knowles (503-808-2166).

Sincerely,

ROBERT W. WILLIAMS
Chair, Regional Interagency Executive Committee

Enclosure

cc:
Charles Egan

1311/ly

The following are GAO's comments on the Regional Interagency Executive Committee's letter dated April 5, 1999.

GAO Comments

1. We agree that there are many components to the plan besides the timber program and many ways to measure the benefits of the Northwest Forest Plan besides commodity production. Components of the Northwest Forest Plan, such as interagency coordination and monitoring, are discussed in detail in the report. The aquatic conservation strategy and the potential contribution of the plan to the overall health of the ecosystem are also discussed in the report. However, we could not provide more detail because many of the plan's contributions, especially to the overall health of the ecosystem and its sustainability, will not be fully realized for many years. Additionally, as we noted in March 1998 testimony,[65] the Forest Service has not developed objective, verifiable accomplishment measures and criteria that focus on actual improvements and gauge longer-term (5- to 10-year) trends in the condition of specific resources or attributes of environmental quality. Therefore, it is not yet possible to accurately measure the plan's contributions to improved ecosystem sustainability, healthier forests, and cleaner water. Finally, our review of the Northwest Forest Plan was limited to the regional plan developed to provide management direction for 22.3 million acres of federal lands in the Pacific Northwest and did not include the plan's other major component—an economic adjustment (worker and community assistance) initiative.

2. In our report, we compare federal timber sale levels for three important periods: (1) the 10-year period (fiscal years 1980-89) prior to the federal court injunctions that brought timber sales to a virtual halt, (2) the level of timber sales under the injunctions (fiscal years 1990-94), and (3) the projected level of timber sales during the first decade after the injunctions were lifted (fiscal years 1995-2004). Additionally, the graphs in this report provide timber sale and other data by year for fiscal years 1980-98.

3. We recognize that technological improvements have allowed some mills in the Pacific Northwest to make better use of smaller-diameter trees. However, as stated in our report, the quality, and thus the commercial value, of trees harvested from federal lands in the Pacific Northwest has declined.

[65] Forest Service: Lack of Financial and Performance Accountability Has Resulted in Inefficiency and Waste (GAO/T-RCED-98-135, Mar. 26, 1998).

Comments From the Interior Columbia Basin Ecosystem Management Project's Executive Steering Committee

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

INTERIOR
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Barry T. Hill
Associate Director Energy Resources and Science Issues
General Accounting Office
Washington, D.C. 20548

April 6, 1999

Dear Mr. Hill:

On behalf of the Regional Executives of the Interior Columbia River Basin Ecosystem Management Project (ICBEMP), we appreciate the opportunity to provide you with interagency comments on the General Accounting Office's (GAO) draft Report entitled "*Ecosystem Planning, Northwest Forest and Interior Columbia River Basin Plans Demonstrate Improvements in Land Use Planning*." The Regional Executives include three Forest Service Regional Foresters, two Research Station Directors, three Bureau of Land Management State Directors, a Deputy Regional Director of the U.S. Fish and Wildlife Service, a Regional Administrator of the National Marine Fisheries Service, and a Deputy Regional Administrator of the Environmental Protection Agency. The comments represent an interagency review of the GAO draft report that addresses the ICBEMP. Specific comments are provided in Attachment 1.

See comment 1.

We concur with your findings that compare and contrast the ICBEMP with the Northwest Forest Plan (NFP), but suggest that the GAO report clarify that the ICBEMP involved an area that is much larger geographically than that covered by the NFP. and one that is more complex and diverse both in terms of social and economic needs and in the number of states, tribes, counties and administrative units involved. More than half of the $41.0 million spent on the ICBEMP generated a new body of peer reviewed, published science. We involved the public, partners, tribes and state, local and county governments during the planning process to a greater degree than was possible within the short time frame of the NFP.

See comment 2.

See comment 3.

See comment 4.

The Regional Executives intend to issue a Supplemental Draft Environmental Impact Statement (SDEIS) for public comment in September 1999 and complete the ICBEMP effort by March 2000. The SDEIS will provide the best estimate of effects of our proposed actions that science can provide and will provide land managers with enough direction to make site-specific project decisions in the context of broad scale information. The ICBEMP has clear direction from the Secretaries of Agriculture and the Interior that the SDEIS and the implementation budget estimates will be based on a firm understanding of budget realities and requirements from environmental laws. The ICBEMP is working to ensure that we address the specific issues raised in the Secretaries' direction in our preparation of the SDEIS, the Final EIS and the Record of Decision (ROD).

See comment 3.

We have heard a great deal from the tribes, the public, and our partners in the 11-month public comment period on the DEISs. The SDEIS will focus on critical broadscale issues related to landscape health, aquatic habitats, human needs, products and services and terrestrial habitats. We agree that there are a great number of decisions that are best left to the local manager, working with local publics and constituencies, but guided by the context of broad scale direction. Traditionally, land management agencies have provided specific prescriptions in plans related to such things as timber harvest and grazing levels. At the basin level, this type of prescription would be inappropriate.

Att. 2-1

See comment 5.

We note that the statement made on page four of your cover letter indicating that we "withdrew" our original proposed draft management alternatives is technically not accurate. The word "withdraw" implies that the draft EIS is not being used in the development of the SDEIS while, in reality, the draft EIS, the science evaluations, and the 83,000 comments received from the public are integral to the development of the SDEIS.

We appreciate the GAO's recognition that the ICBEMP represents a significant advance in land management planning, interagency coordination, public involvement, the use of science, and the attempt to incorporate adaptive management into a new ecosystem-based strategy for public land management..

Thank you for the opportunity to provide these comments. Should you have any questions please contact Martha Hahn at (208)373-3899 ext. 4001 or Dale Bosworth at (406) 329-3511.

Sincerely,

Martha G. Hahn, Chair
ICBEMP Executive Steering Committee.

Dale N. Bosworth, Vice-Chair
ICBEMP Executive Steering Committee

Enclosure

cc:
Charles Egan, GAO
Ross Campbell, GAO

The following are GAO's comments on the Interior Columbia Basin Ecosystem Management Project's Executive Steering Committee's letter dated April 6, 1999.

1. We agree that there are important differences in the size and complexity of the areas addressed by the Interior Columbia Basin Ecosystem Management Project and the Northwest Forest Plan that have contributed to the differences in the amount of time and money spent on each. We did not intend to suggest that the two plans should have been completed over a similar period of time at a comparable cost. Rather, our point with respect to the interior Columbia River basin plan was that it has taken significantly longer and cost much more than the agencies anticipated. We revised the body of our report to emphasize some of the differences between the two plans, noting that the interior Columbia River basin plan covers a larger geographical area and its development included more opportunities for public participation.

2. We consider the Committees' commitment to issuing a supplemental draft environmental impact statement for public comment in September 1999 and to completing the project by March 2000 to be fully responsive to the recommendation in our draft report that the interagency team be directed to establish a time line for revising the draft plan. We therefore updated the time line in the report to reflect these dates (see table II.1) and deleted this recommendation.

3. It is apparent from the Committee's comments and from the Secretaries' October 8, 1998, letter to Members of Congress that the interior Columbia River basin plan will not provide a comprehensive blueprint for managing the federal lands in the basin. According to the Committee, the supplemental draft environmental impact statement will include the best estimate that science can provide of the effects of their proposed actions and will give land managers enough direction to make site-specific project decisions in the context of broad-scale information. Later in their comments, the Committee wrote that the land management agencies' plans have traditionally provided specific prescriptions for such things as timber harvests and grazing levels but that this type of prescription would be inappropriate for a plan at the scale of the basin.

In a draft of this report, we recommended that the project identify the ecological and socioeconomic trade-offs among the different land management alternatives and provide land managers with clear direction and performance standards for implementation. We acknowledge that the

environmental impact statement and final plan for the interior Columbia River basin cannot be as specific with respect to trade-offs or performance standards as the plans for managing national forests or BLM lands. We therefore revised the recommendation to refer only to those issues that the agencies determine need to be addressed at a basinwide scale. Nevertheless, we continue to believe that, for those basinwide issues, the agencies must thoroughly describe the ecological and socioeconomic trade-offs of the different management approaches so that the Congress, the public, and other interested parties can meaningfully evaluate the different alternatives.

Because a basinwide impact statement or record of decision will not be able to describe in detail all management activities throughout the basin, additional management decisions will have to be made at a scale smaller than the basin. We are reminded of early estimates by the agencies that a basinwide scientific assessment and decision would cut their planning costs in half. Therefore, we also revised the recommendation to stress that it is important for the agencies to tell the public and the Congress how this decision-making process will unfold, how much it will cost, and how long it will take.

4. The Committee commented that it has received clear direction from the Secretaries of Agriculture and the Interior to recognize budget realities and the requirements of environmental laws in completing the project. However, because the supplemental statement and subsequent planning documents have not yet been issued and the team's actions are not complete, we made no changes to our recommendation.

5. To avoid the implication that the agencies withdrew any of their original management alternatives, we revised the report to say that they are developing one or more new alternatives.

In addition to the agency letter printed in this appendix, the Committee's comments included an attachment with several technical observations on, for example, the estimated budget for the project in fiscal year 2000. We have revised the report to respond to these comments, where appropriate.

The attachment also included another substantive issue. The Committee said our report should not evaluate the effectiveness of the strategy solely on the basis of its impact on timber production. They emphasized the importance of the plan for other variables, including the habitats of wildlife such as salmon, bulltrout, grizzly bear, lynx, and 187 other species

of concern. We agree that the interior Columbia River basin plan reviewed in this report should ultimately be evaluated on the basis of much more than its impact on timber production. However, the plan is still in the proposal phase and its ecological benefits have yet to be achieved. While our discussion of the interior Columbia River basin plan's potential impact on timber production is also speculative, one of our three objectives was to report on the actual or expected effect of the plan on the quantity and quality of timber sold from federal lands.

Objectives, Scope, and Methodology

Concerned about the potential costs, time, and effectiveness of broad-scoped, ecosystem-based analyses and studies, the Chairmen of the Senate Committee on Energy and Natural Resources, the House Committee on Resources, and the House Committee on Agriculture asked us to examine the Northwest Forest Plan and the Interior Columbia Basin Ecosystem Management Project.

In this report, we used as criteria the practical steps in implementing an ecosystem approach to federal land management and identified deficiencies and barriers within the federal land management agencies' decision-making processes to discuss (1) the extent to which each effort has addressed long-standing planning deficiencies, (2) the problems encountered by the agencies that have contributed to delays and increased costs, and (3) the effect that the plans have had, or are expected to have, on the quantity and quality of timber sold from federal lands covered by the plans.

Our review of the Northwest Forest Plan was limited to the regional plan developed to provide management direction for 22.3 million acres of land managed by the Forest Service and BLM in the Pacific Northwest. We did not review the plan's other major component—an economic adjustment initiative to assist workers, tribes, and communities affected by reductions in federal timber harvests. In addition, in performing our work, we did not evaluate any scientific documents or conclusions used or being used in either the Northwest Forest Plan or the Interior Columbia Basin Ecosystem Management Project.

For our review of the Northwest Forest Plan, we met with, and examined documents provided by, managers and staff from the interagency group established to help managers implement the plan. We also contacted officials or reviewed documents from (1) the Forest Service's Pacific Northwest (Region 6) and Pacific Southwest (Region 5) offices and its Pacific Northwest Research Station, (2) BLM's California and Oregon state offices, and (3) Agriculture's Office of Forestry and Economic Assistance. In addition, we spoke with officials from (1) the Department of the Interior's Fish and Wildlife Service and (2) the Department of Commerce's National Marine Fisheries Service about issues pertaining to the Endangered Species Act. We also spoke with officials from (1) the Environmental Protection Agency, (2) Interior's Bureau of Indian Affairs, and (3) the Small Business Administration about issues pertaining to interagency coordination and cooperation. Finally, we also met with and

obtained information from representatives of environmental groups and timber industry organizations.

For our review of the Interior Columbia Basin Ecosystem Management Project, we examined proposed management alternatives in draft environmental impact statements. In the course of our work, we also met with and obtained documents provided by project managers and staff, including the past and current team leaders. We also spoke with and obtained information relevant to the proposed plan from environmental groups, industry, county associations, and a Forest Service employee group.

We performed our work from September 1997 through March 1999 in accordance with generally accepted government auditing standards. We obtained comments on a draft of this report from senior regional officials responsible for the two plans. These comments and our responses are presented in appendixes III and IV.

Major Contributors to This Report

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