Chapter 5
Cumulative Effects

5.1 Introduction
5.2 Context for Analysis
5.3 Analysis of Cumulative Effects
5. CUMULATIVE EFFECTS

5.1 INTRODUCTION

The National Environmental Policy Act (NEPA) defines cumulative effects as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR1508.7). This chapter presents an analysis of the cumulative effects (negative or beneficial) of the alternatives, including No Action, on the environment in the context of other local, State, tribal, and Federal management activities in the State of Washington.

The substantive scope of this cumulative effects analysis for future effects is predicated on a review of statutes, regulations, plans, and programs that may interact with the Washington Forest Practices Rules and/or pertain to forest environments, and that may have a direct or indirect effect on aquatic resources. These statutes, regulations, plans, and programs are described in subsection 5.2.2 (Statutes, Regulations, Plans, and Programs). Due to the large geographic scope of the analysis area, it is not feasible to analyze all habitat-specific activities that are occurring, have occurred in the past, or that will occur in the future in a quantitative manner. Past actions are discussed for each resource and are assumed to have developed the current and existing conditions for each resource. By reviewing applicable statutes, regulations, plans, and programs the analysis captures the intent of management activities that are occurring or are planned to occur in the future that may interface with aquatic resources on lands regulated by the Washington Forest Practices Rules. This review is based on the environmental objectives of each applicable statute, regulation, plan, and program. It is assumed that no management activity is occurring or would occur outside of an implemented statute, regulation, plan, or program at the Federal, tribal, State, or local level. Although the analysis is necessarily qualitative, it provides a thorough review of other activities within the region that, when combined with the alternatives considered in this Final Environmental Impact Statement (FEIS), could have a negative or beneficial effect on aquatic resources.
Chapter 5

The chapter begins with a description of the context for the cumulative effects analysis; first providing an overview of land management and use within the State, then describing the statutes, regulations, plans, and programs with potential cumulative effects implications (for Federal, State, and local programs). The discussion of cumulative effects is grouped into the following categories:

- Air Quality
- Land Ownership and Use
- Aquatic Resources
- Vegetation and Wildlife
- Social, Economic, and Cultural Issues

5.2 CONTEXT FOR ANALYSIS

The analysis area for the project is the entire State of Washington, which contains approximately 43 million acres. The HCP covered lands are described in Appendix A (Regional Summaries) and Chapter 3 (Affected Environment). Subsection 5.2.1 (Land Ownership and Past and Present Land Uses) provides context for the cumulative effects analysis by summarizing the present ownership of lands in the State, as well as the past and present uses of these lands. Subsection 5.2.2 (Statutes, Regulations, Plans, and Programs) provides further context by summarizing other ongoing and reasonably foreseeable future actions as statutes, regulations, plans, and programs. Additional actions and other programs that are relevant to the cumulative effects analysis of a specific resource area are identified in Section 5.3 (Analysis of Cumulative Effects) as appropriate.

5.2.1 Land Ownership and Past and Present Land Uses

Land ownership and use is extremely varied within the State and is described in subsection 3.2 (Land Ownership and Use). This subsection provides a general overview as context for the reader. It also summarizes land uses from an historical perspective. Subsection 3.2 should be referred to for further discussion, but many other subsections of Chapter 3 (Affected Environment) include descriptions of past land use practices and their resulting effects on present conditions (e.g., subsection 3.4.2.3, History of Forest Practices Affecting Erosion and Sedimentation; subsection 3.7.1.6, Historic Protection of Riparian Areas; and subsection 3.7.2.5, Historic and Current Conditions of Wetlands Protection). Also, DEIS Appendix A (Regional Summaries) describes current conditions by analysis region, which represents the effects of past land use practices. These current conditions represent the environmental baseline for the impacts assessment.

5.2.1.1 Land Ownership

As discussed in subsection 3.2.1 (Introduction), Federal lands cover about 30 percent of the State and are dominant in the mountainous regions (Table 3-1). Slightly over one-third of the Federal land (11 percent of the State) is in a highly protected management status, such as wildernesses, national parks, and wildlife refuges. The majority of the remaining Federal land is in national forests outside of wilderness; a large portion of these National Forest lands are managed under a protected status identified by the
Northwest Forest Plan (USDA Forest Service and USDI Bureau of Land Management 1994) (subsection 5.2.1.2, Past and Present Land Uses). State lands cover about 10 percent of Washington. The vast majority of these lands (about 8 percent of the State) are managed by Washington DNR. Most of the remainder is in State Wildlife Areas and State Parks. Counties and cities own less than 1 percent of the State, and tribal lands cover about 7 percent. The remaining 53 percent of the lands are in private ownership.

In western Washington, Federal lands comprise 35 percent of the area. Over half of this area (18 percent of western Washington) consists of Federal lands with a highly protected management status (i.e., wildernesses, national parks, and wildlife refuges). The majority of the remaining Federal land is in national forests outside of wilderness; a large portion of these National Forest System lands are managed under a protected status identified by the Northwest Forest Plan (USDA Forest Service and USDI Bureau of Land Management 1994) (subsection 5.2.1.2, Past and Present Land Uses). State lands comprise about 12 percent of western Washington, and Washington DNR manages the vast majority of these lands (about 11 percent of the westside). Counties and cities own about 1 percent, and tribal lands comprise about 2 percent of western Washington. Private lands make up the remaining 50 percent of westside lands.

About 27 percent of eastern Washington lands are in Federal ownership. About one-quarter of these lands (7 percent of the eastside) is comprised of Federal lands with a highly protected management status (i.e., wildernesses, national parks, and wildlife refuges). The majority of the remaining Federal land is in national forests outside of wilderness. State lands comprise about 9 percent of the eastside of the State, and Washington DNR manages the vast majority of these lands (about 7 percent of eastern Washington). Counties and cities own much less than 1 percent of the lands. Tribal lands (primarily the Yakama, Colville, and Spokane Indian Reservations) comprise 10 percent of the eastside land area, and private lands make up 55 percent of eastern Washington lands.

5.2.1.2 Past and Present Land Uses

Washington State has a highly varied history of land development and use, but the major factors influencing present conditions have occurred in the past 100 years. Major factors have included conversion of lands to urban and industrial developments; diking, channelizing, hydropower development, and water withdrawals along rivers; conversion of lands to agriculture; forest management and associated road development; development of highways and road systems throughout the State; and mining activities. This development has produced the present distribution of land cover types in the State (Table 3-2), with major differences among regions of the State and between the west and east sides. Descriptions of the historic development in the State are presented by analysis region in DEIS Appendix A. The information contained in these regional summaries has been considered throughout this cumulative effects analysis.

In western Washington, 83 percent of the land is presently forested, agricultural lands make up 5 percent, urban-industrial lands make up 4 percent, and the remaining 8 percent are...
cumulative effects final eis

5-4

chapter 5

Comprised of water and wetlands, ice/snow and bare rock, shrubland, and grassland. Most of the development has occurred along Puget Sound and along the major river systems.

In contrast, eastern Washington is 36 percent forested; 26 percent agricultural; 35 percent shrubland and grassland; 1 percent urban-industrial; and the remaining 3 percent water, wetlands, ice/snow, and bare rock. Major hydroelectric and irrigation developments along the Columbia River system have resulted in the greatest change in eastern Washington, particularly in non-forested areas.

Development and land use in Washington State has been heavily affected by the distribution and size of the human population, and the human population is expected to continue growing at a rapid rate (subsection 3.14, Social and Economic Environment). The State’s population grew by 21 percent from 1990 to 2000 and is projected to continue to grow at a fairly rapid rate over the next 20 years (Washington Office of Financial Management 2004). Increasing population will increase urban and industrial development and result in continued conversion of forestland to other types of land use.

The present ownership and management of Washington’s forestlands are summarized in Table 3-3. This table shows that 32 percent of the forestlands in western Washington are in Federal or State protected status lands that are not primarily managed for timber production. This includes lands that are in wildernesses, national and State parks, and wildlife refuges, but also includes lands set aside by the Northwest Forest Plan in late successional reserves and adaptive management areas (See below) (USDA Forest Service and USDI Bureau of Land Management 1994). About 7 percent of the westside forestlands are in other Federal or tribal ownerships. The remaining 62 percent of the westside forests are subject to Washington Forest Practices Rules and consist of State lands (13 percent), private lands (47 percent), and county and city lands (less than 2 percent). Many of these lands that are subject to the Washington Forest Practices Rules are also managed under a Habitat Conservation Plan (HCP) agreement under the Endangered Species Act that restricts forest management activities. For example, most of the State forestlands in western Washington are managed under the State Trust Lands HCP (12 percent of the westside forests) (Washington DNR 1997d), and a portion of the private lands (3 percent of westside forests) and city/county lands (1 percent of westside forests) are managed under individual HCPs (subsection 5.2.2.3, Local Statutes and Regulations and Local and Private Plans and Programs) (Table 5-1). As a result, of the 62 percent of westside forests subject to Washington Forest Practices Rules, almost one-quarter of them (15 percent of westside forests) are covered under existing HCPs. Figure 5-1 gives a statewide view of the forestlands in Washington, along with broad categories of preservation, protection, and conservation.

In eastern Washington, about 24 percent of all forestlands are in Federal or State protected status that is not primarily managed for timber production. About 43 percent of the eastside forests are in other Federal or tribal ownerships. The remaining 34 percent of the eastside forests are subject to Washington Forest Practices Rules and consist of State lands (7 percent), private lands (26 percent), and a very small amount of city/county lands (much less than 1 percent). Of the 34 percent of eastside forests subject to Washington
Table 5-1. Habitat Conservation Plans in Washington State (as of June 1, 2004).

<table>
<thead>
<tr>
<th>Name</th>
<th>Species Description</th>
<th>Approximate Start Date(s)</th>
<th>Status Description</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Fork Timber</td>
<td>All Species</td>
<td>1994</td>
<td>Completed 1995</td>
<td>53,500</td>
</tr>
<tr>
<td>Scofield</td>
<td>Spotted Owl</td>
<td>1996</td>
<td>Completed 1996 4/</td>
<td>40</td>
</tr>
<tr>
<td>Plum Creek (Cascades)</td>
<td>All Vertebrates</td>
<td>1993</td>
<td>Completed 1996</td>
<td>170,000</td>
</tr>
<tr>
<td>Port Blakely (Robert B. Eddy)</td>
<td>All Species</td>
<td>1994</td>
<td>Completed 1996</td>
<td>7,500</td>
</tr>
<tr>
<td>Washington DNR</td>
<td>All Species</td>
<td>1993</td>
<td>Completed 1997</td>
<td>1,600,000</td>
</tr>
<tr>
<td>Seattle Public Utilities</td>
<td>Multiple Species</td>
<td>1994</td>
<td>Completed 2000</td>
<td>91,000</td>
</tr>
<tr>
<td>Green Diamond Resource Company 5/</td>
<td>Multiple Species</td>
<td>1997</td>
<td>Completed 2000</td>
<td>262,000</td>
</tr>
<tr>
<td>Tacoma Water</td>
<td>Multiple Species</td>
<td>1997</td>
<td>Completed 2001</td>
<td>15,000</td>
</tr>
<tr>
<td>Boise Cascade</td>
<td>Spotted Owl</td>
<td>2001</td>
<td>Completed 2001</td>
<td>620</td>
</tr>
<tr>
<td>Day Break Mine (Storehdahl)</td>
<td>Aquatic Species</td>
<td>1999</td>
<td>Completed 2004</td>
<td>300</td>
</tr>
</tbody>
</table>

1/ Start dates are approximate. Applicants often prepare in advance of initiating active involvement with the Services.
2/ Acres presented here are rounded from acres reported in the original HCP documents. In some cases, lands have been added to or subtracted from that reported in the original documents and actual acres managed presently under the HCPs may be slightly different.
3/ Previously known as the Murray-Pacific Corporation, name was changed to the original company name.
4/ The original documents were completed in 1996. However, unlike the other completed HCPs, this resulted in a short-term (1 year) permit, which has since expired. The mitigation continues in the form of a perpetual deed restriction.
5/ Previously known as the Simpson Resource Company.

Source: USFWS 2004a.

Forest Practices Rules, about 10 percent (3 percent of eastside forests) are covered under existing HCPs (Figure 5-1).

The present condition of most forestlands and associated riparian areas in Washington State is a function of historic timber harvest, associated road construction activities, and many other activities (See above). These activities have occurred over a period of more than 100 years, during which there were few environmental restrictions. Prior to the adoption of the Washington Forest Practices Act in 1974, there were no rules or regulations that protected public resources from the impacts of forest practices activities on State and private forestlands. The Washington Forest Practices Rules have become more restrictive ever since, culminating with the current Washington Forests Practices Rules adopted in 2001. In part, changes to the rules have been due to an evolving understanding of the scientific underpinnings associated with public resource protection. Also, in an effort to increase protection of the environment, public interest groups have identified areas for improvement in resource protection.

As a result of timber harvest and other activities during the periods with less restrictive regulations, the condition of riparian areas on State and private lands is now dominated by early and mid-seral vegetation (subsection 3.7.1.7, Current Condition of Riparian Areas). Similarly, as a result of extensive road development and harvest on unstable slopes, sediment-related impacts have occurred in many watersheds (subsection 3.4.2.3, History of Forest Practices Affecting Erosion and Sedimentation). In addition, many other land uses discussed above have added to adverse impacts that have occurred due to past actions. Although the sources of many of these problems have been corrected, many riparian areas and stream systems on forestlands have not yet fully recovered from forest practices conducted prior to the 1974 Washington Forest Practices Act. Some resources, such as large woody debris (LWD), may require many additional decades to fully recover.
Chapter 5

Figure 5-1. Forestlands in Washington State by Broad Protection/Conservation Category.
Chapter 5

5.2.2 Statutes, Regulations, Plans, and Programs

This subsection presents a summary of the statutes, regulations, plans, and programs with cumulative effects implications for the proposed action and the alternatives. The focus of this review is on the environmental objectives of each applicable statute, regulation, plan, and program recognizing that more improvements are needed for these programs to reach full compliance. Federal, State, and local government statutes, regulations, plans, and programs may interact with the Washington Forest Practices Rules under all of the alternatives; working together to cumulatively affect species and their habitat, in either a positive or negative manner.

These statutes, regulations, plans, and programs are considered and factored into the effects analysis in subsection 5.3 (Analysis of Cumulative Effects). Following is a brief summary of those statutes, regulations, plans, and programs most relevant to forest practices activities. Others are discussed in subsection 5.3, as appropriate.

5.2.2.1 Federal Statutes, Regulations, Plans, and Programs

Endangered Species Act

The Endangered Species Act (ESA) was passed in 1973 and is intended to protect and conserve species listed as endangered or threatened and conserve the habitats upon which they depend. Furthermore, the ESA mandates that all Federal agencies seek to conserve endangered and threatened species and use their resources and authorities to further such purposes. See subsection 1.5.1.1 (Endangered Species Act) for a description of the ESA and the sections of the Act related to this project. Of particular note here is Section 10 of the ESA. This section allows the Services to issue an Incidental Take Permit (ITP), which authorizes the take of listed species by non-Federal entities. To obtain an ITP, applicants must manage their lands under an approved HCP. The approved HCPs in Washington are discussed in subsection 5.2.2.2 (State Statutes, Regulations, Plans, and Programs) and 5.2.2.3 (Local Statutes and Regulations and Local and Private Plans and Programs).

The 1982 and 1988 amendments to the ESA require that recovery plans be developed and implemented to promote the conservation of listed species. Recovery plans have been developed for some threatened and endangered species in Washington. These are discussed in subsection 5.3 (Analysis of Cumulative Effects), where appropriate.

Specific forest practices conducted on or near critical habitat of State-designated threatened and endangered species are considered Class IV Special forest practices and must comply with the State Environmental Policy Act (SEPA) as well as other species specific protection measures listed in WAC 222-16-080.

Cumulatively, the proposed action and the ESA objectives would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the ESA would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the objectives
Chapter 5

of the ESA are to protect and conserve species listed as endangered or threatened and to conserve the habitats upon which they depend. Implementation of the proposed action would be consistent with these objectives by furthering habitat protections on forestlands regulated by the Forest Practices Act in the State of Washington. This would be accomplished through measures aimed at protecting riparian and aquatic habitats such as Riparian Management Zones (RMZs), no-harvest buffers around unstable slopes, and implementation of road maintenance and abandonment plans. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4 would not one of the alternatives would contribute as effectively as Alternative 2 to ESA objectives of protecting listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

Clean Water Act

The Clean Water Act (33 U.S.C. 1251), under the jurisdiction of administered by the Environmental Protection Agency (EPA) and the U.S. Army Corps of Engineers, was enacted in 1972 and is the cornerstone of surface water quality protection in the United States. The U.S. Army Corps of Engineers is responsible for administering Section 404 of the Clean Water Act, which addresses permits for the discharge of dredge and/or fill material into waters of the United States, including wetlands; although, the EPA has authority to veto any U.S. Army Corps of Engineers permit. The EPA is responsible for administering Section 402 of the Act, which regulates point sources that discharge pollutants into waters of the United States. The statute employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, manage polluted runoff, and finance municipal wastewater treatment facilities and non-point source pollution control activities. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the Nation’s waters so that they can support “the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water.”

For many years Initially, the Clean Water Act’s focus was mainly on restoring and maintaining the chemical integrity of water bodies; however, the Act is now administered by the EPA and U.S. Army Corps of Engineers to address the overall chemical, physical, and biological integrity of our nation’s waters. During the last decade, however, more attention has been given to water’s physical and biological integrity. Evolution of Clean Water Act programs has also included a shift from a program-by-program, source-by-source, pollutant-by-pollutant approach to more holistic watershed-based strategies in which equal emphasis is placed on protecting healthy waters and restoring impaired ones. The Washington Department of Ecology (Ecology) is the agency responsible for carrying out the State’s regulatory provisions of the Clean Water Act (See subsection 5.2.2.2, Washington Department of Ecology Water Quality Plans and Programs, for further
elaboration on the Clean Water Act and how it interacts with the Washington Forest Practices Rules).

Cumulatively, the proposed action and the strategies of the Clean Water Act would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the strategies of the Clean Water Act would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the strategies of the Clean Water Act are to protect healthy waters and restore impaired ones. Implementation of the proposed action would be consistent with these strategies by protecting and restoring aquatic resources on forestlands regulated by the Washington Forest Practices Act. This would be accomplished through measures aimed at protecting riparian habitat and aquatic resources such as RMZs, no-harvest buffers around unstable slopes, and implementation of road maintenance and abandonment plans. Consistent with the Ecology’s policy guidance for Section 303(d) listings, the proposed action would also employ adaptive management as a primary component to reduce scientific uncertainty and to determine the effectiveness of the protection measures (Washington Department of Ecology 2002d). Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4 would not contribute as effectively as Alternative 2 to Clean Water Act strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

**National Historic Preservation Act**

The National Historic Preservation Act (NHPA) was passed in 1966. The goal of the NHPA is for Federal agencies to act as responsible stewards of our Nation’s resources when their actions affect historic properties. The NHPA established the Advisory Council on Historic Preservation as the entity with the legal responsibility to encourage Federal agencies to factor historic preservation into Federal project requirements. Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. The historic preservation review process mandated by Section 106 is outlined in regulations issued by the Advisory Council on Historic Preservation (Protection of Historic Properties [36 CFR Part 800]).

As defined in the U.S. Department of Interior regulations, “undertaking” means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; or those requiring a Federal permit, license or approval. The issuance of a permit for an HCP is generally considered by the Services to be an undertaking subject to compliance with Section 106 of the NHPA, although each HCP is unique and may or may not have an affect on historic properties. Consultation
with the tribes and the public is emphasized, while consultation with the State Historical Preservation Officer is required. Section 106 review requires that agencies: 1) determine if their action is an undertaking; 2) if so, gather information to determine if any cultural or historic properties within the area of potential effect are eligible for the National Register of Historic Places; 3) determine how historic properties might be affected; 4) explore alternatives to avoid or reduce harm to historic properties; and 5) reach agreement with the State Historic Preservation Officer and tribes affected by the action on measures to address any adverse effects.

The Services will comply with Section 106 of the NHPA by making a determination whether or not the proposed Federal action is an undertaking, as previously defined, and, if so, whether the proposed action has the potential to cause effects on historic properties, (i.e., change the characteristics of historic properties). The Federal review will focus on the proposed action of issuing a permit or approval for activities conducted according to requirements of the Washington Forest Practices Rules. Thus, the Services’ NHPA Section 106 compliance responsibilities will be the same for all of the Action Alternatives.

Cumulatively, the proposed action and the National Historic Preservation Act would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the NHPA would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the goal of the National Historic Preservation Act (NHPA) is to serve as responsible stewards of our Nation’s historic resources when management actions could affect these resources. Implementation of the proposed action would be consistent with this goal by furthering protection of sensitive sites and riparian areas on forestlands regulated by the Washington Forest Practices Act. These areas are where cultural and historic resources are often found. Further, forest landowners and many tribes in Washington have agreed to voluntary procedures, via the collaborative Forest and Fish Report (FFR) process, for identifying and protecting historic and cultural resources beyond what is required by State regulation. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4 would not be as effective as Alternative 2 to NHPA strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

The Pacific Northwest Electric Power Planning and Conservation Act

This Act passed by Congress in 1980 includes a compact of interstate agencies of Idaho, Montana, Oregon, and Washington directing the Northwest Power and Conservation Council (previously known as the Northwest Power Planning Council) to “protect, mitigate, and enhance fish and wildlife habitat, including related spawning habitat on the
Chapter 5

Columbia River and its tributaries affected by the development, operation, and management of [hydroelectric projects] while assuring the Pacific Northwest an adequate, effective, economical, and reliable power supply.” The Council is primarily a planning, policymaking, and review body for implementation of actions taken by Federal agencies relating to Federal hydropower in the Columbia River Basin.

Part of the Northwest Power and Conservation Council tasks include development of the Columbia River Basin Fish and Wildlife Program, which establishes goals, objectives, and mitigation relative to Federal hydroelectric and water storage projects in the basin. These directions have resulted in improvements to fish passage facilities on Federal mainstem dams on the Columbia River and its tributaries. Additionally under this program, habitat for both fish and wildlife has been and continue to be purchased and improved. This has included restoration of streams in forested regions along the Columbia River tributaries.

Currently there is a planning process that will result in development of a subbasin plan for each of the 50 subbasins in the Columbia River system, which would include recommendations for actions that should be taken in each of these subbasins to improve conditions for fish and wildlife. Results of these subbasin plans will help direct where Federal monies will be spent to enhance environmental conditions. These actions will have effects in all Columbia River subbasins, which will benefit fish in all of the Columbia River basins affected by the Washington Forest Practices Rules. This would include improvements in up to 6 of the 12 analysis regions. The specific details in each will vary but could include: wildlife habitat or streamside land purchases, instream structural enhancements, increased diversion screening for fish protection, improved water supply and improved water quality conditions, and improved hatchery management for the benefit of wild listed stocks. Additionally, funding would be supplied for research to determine the effects of actions taken in the subbasins.

Cumulatively, the proposed action and the objectives of the Pacific Northwest Electric Power Planning and Conservation Act would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the strategies of the Pacific Northwest Electric Power Planning and Conservation Act would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the objectives of the Pacific Northwest Electric Power Planning and Conservation Act are to primarily serve as a planning, policymaking, and review body for implementation of actions taken by Federal agencies relating to Federal hydropower in the Columbia River Basin. Implementation of the proposed action would be consistent with these objectives by furthering protection of aquatic resources on forestlands regulated by the Washington Forest Practices Act. This would be accomplished through measures aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes, and implementation of road maintenance and abandonment plans. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4 would not None of the alternatives would contribute as effectively as Alternative 2 to Pacific Northwest Electric Power Planning...
and Conservation Act strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

Magnuson-Stevens Fishery Conservation and Management Act

This Federal act was created to restore and maintain harvestable numbers of fish, including salmon. Like the Salmon and Steelhead ESA Section 4(d) rule, it may have indirect benefits to bald eagles by providing an important source of food. Cumulatively, the proposed action and the Magnuson-Stevens Fishery Conservation and Management Act would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the Magnuson-Stevens Fishery Conservation and Management Act would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the objectives of the Magnuson-Stevens Fishery Conservation and Management Act are to restore and maintain harvestable numbers of fish, including salmon. Implementation of the proposed action would be consistent with these objectives by furthering protections of salmon habitat on forestlands regulated by the Washington Forest Practices Act. This would be accomplished through measures aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes, and implementation of road maintenance and abandonment plans. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4 would not contribution as effectively as Alternative 2 to Magnuson-Stevens Fishery Conservation and Management Act strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

Northwest Forest Plan

The Northwest Forest Plan was developed after years of controversy surrounding the management of Federal forestlands, including struggles over timber harvest, habitat needs of the Northern spotted owl and native salmon, old-growth preservation, and jobs. Implemented in 1994, the Northwest Forest Plan, an ecosystem approach to forest management, covers approximately 24 million acres of Federal forestland in western Washington, western Oregon, and northern California (USDA Forest Service and USDI Bureau of Land Management 1994). The Bureau of Land Management and the U.S. Forest Service jointly manage the Northwest Forest Plan. The lands under the Plan are divided into different areas according to allowable management activities:
Chapter 5

- Congressional Reserves make up approximately 7 million acres or 30 percent of the total land in the Northwest Forest Plan and include National Parks and Monuments, Wilderness Areas, Wild and Scenic Rivers, National Wildlife Refuges, and Department of Defense lands. These lands have been reserved by act of Congress and are preserved from forest management. There are currently 23 designated Wilderness Areas in Washington State.

- Late-Successional Reserves also make up approximately 7 million acres or 30 percent of the total land under the Northwest Forest Plan and aim to provide and promote a “functional, interactive, late-successional old-growth forest ecosystem” for old-growth and late-successional dependent wildlife species such as the northern spotted owl. Commercial timber harvest is not allowed in late-successional reserves, although select silvicultural treatments (for example, thinning) may be permissible in stands up to 80 years of age if the activity furthers late-successional or old-growth forest conditions.

- Adaptive Management Areas represent 1.5 million acres or 6 percent of the land under the Northwest Forest Plan and are managed to explore and develop different methods of forestry management to achieve ecological, economic, social, and community objectives.

- Managed Late-Successional Areas are lands mapped and defined as known northern spotted owl activity centers and unmapped buffer areas set up to protect rare and locally endemic species. While their location may shift over time, managed late-successional areas make up 102,200 acres, or 1 percent of the land under the Northwest Forest Plan.

- Administratively Withdrawn Areas cover 1.5 million acres or 6 percent of the lands under the Northwest Forest Plan and are lands not scheduled for timber harvest, including recreational areas, visual areas, backcountry, and other lands not suitable for harvest.

- Riparian Reserves make up approximately 2.6 million acres or 11 percent of the total land under the Northwest Forest Plan. They are riparian areas along streams, wetlands, ponds, and lakes, along with unstable areas and other areas that are designed to help maintain and conserve aquatic and riparian-dependent species habitat and riparian function, to improve travel and dispersal corridors for terrestrial plants and animals, and to provide a connection between late-successional forest habitats.

- Matrix Lands cover almost 4 million acres, or 16 percent of the land under the Northwest Forest Plan, and consist of Federal lands not assigned to one of the six land allocations described above.

Riparian Reserves range from 100 feet (seasonal streams) to 300 feet (fish-bearing streams) in width on each side of a stream. Consequently, streams on most Federal lands within Washington have more protection for aquatic and riparian-associated wildlife than...
any of the alternatives considered in this FEIS. A majority of Federal lands are located at 
higher elevations along the Cascade Crest and on the Olympic Peninsula. Consequently, 
on a broad-scale Federal lands include a higher proportion of low order, non-fish-bearing 
streams compared to State and private forestlands.

Although limited thinning and salvage activities may be allowed in the Reserves, only 5.5 
million acres or 22 percent of the lands under the Northwest Forest Plan are available for 
commercial timber harvest (USDA Forest Service and USDI Bureau of Land 
Management 1994). Most timber harvest occurs on Matrix Lands, and to a limited 
extent, on Adaptive Management lands. On lands available for commercial timber 
harvest, the U.S. Forest Service and U.S. Bureau of Land Management have established 
standards and guidelines to ensure a sustainable ecosystem and to protect known northern 
spotted owl activity centers (USDA Forest Service and USDI Bureau of Land 
Management 1994).

Additionally, the Northwest Forest Plan includes an Aquatic Conservation Strategy 
developed to restore and maintain the ecological health of aquatic ecosystems in the 
Northwest Forest Plan area (USDA Forest Service and USDI Bureau of Land 
Management 1994). The Aquatic Conservation Strategy sets up a system of Riparian 
Reserves, designates key watersheds in the Northwest Forest Plan area, describes 
requirements and procedures for conducting watershed analyses, and establishes 
watershed restoration programs for lands in the Northwest Forest Plan area. Riparian 
Reserves require that wide riparian buffers be maintained along all streams. The interim 
widths are designed to provide a high level of fish and riparian protection until watershed 
and site-specific analysis can be conducted. This strategy was recently clarified in a 
Record of Decision, which amended the Northwest Forest Plan in March 2004. This 
decision clarifies that the Aquatic Conservation Strategy objectives are intended to be 
met at the fifth-field watershed or larger scale, and not at the project-level scale. A fifth-
field watershed ranges from approximately 30 to 150 square miles (20,000 to 100,000 
acres).

The standards and guidelines in the Northwest Forest Plan, which include riparian buffers 
and other protective measures, are designed to meet the Aquatic Conservation Strategy 
objectives over time (USDA Forest Service and USDI Bureau of Land Management 
1994). The Aquatic Conservation Strategy clarification allows projects that may have 
short term adverse effects, such as watershed restoration projects, to move forward as 
long as they comply with all of the protective measures specified in the Northwest Forest 
Plan standards and guidelines.

The combined effects of the Aquatic Conservation Strategy and allowable uses of the 
Northwest Forest Plan work together to maintain and improve habitats for aquatic and 
riparian-dependent species on Federal forestland. Over time, the Northwest Forest Plan 
will create millions of acres in additional late successional forest as younger stands are 
preserved and silvicultural treatments are limited to helping accelerate the development 
of older forest stand conditions (USDA Forest Service and USDI Bureau of Land 
Management 1994).
Chapter 5

Approximately 7 million acres of Federal forestland are managed in accordance with the Northwest Forest Plan in Washington State (FEMAT 1993) (USDA Forest Service and USDI Bureau of Land Management 1994). This represents about 30 percent of all forestlands. The breakdown of lands within the Northwest Forest Plan by acres within each area and percent of total lands within the Northwest Forest Plan follows:

- Congressional Reserves – 4.2 million acres, or 60 percent
- Managed and Late-Successional Reserves – 1.5 million acres, or 22 percent
- Adaptive Management Areas – 292,000 acres, or 4 percent
- Administratively Withdrawn Areas – 250,100 acres, or 4 percent
- Riparian Reserves – 232,300 acres, or 3 percent
- Matrix Lands – 465,000 acres, or 7 percent

The majority of Washington forestland under the Northwest Forest Plan are protected in reserves and is not available for forest management activities, including commercial timber harvest. Silvicultural treatments are limited on lands within Managed and Late-Successional Reserves to those that foster older forest stand conditions. Commercial timber harvest occurs primarily within the Matrix Lands, or on only 7 percent of the lands under the Northwest Forest Plan in Washington State. There are additional protection measures in place on these lands that further restrict timber harvest, such as a 15 percent green tree retention requirement and special protection for sensitive species habitat and wildlife needs (FEMAT 1993).

Cumulatively, the proposed action and the Northwest Forest Plan would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the Northwest Forest Plan would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the purpose of the Northwest Forest Plan is to allow multipurpose management of Federal forestlands by balancing the need for timber harvest, habitat, old-growth preservation, and jobs. Implementation of the proposed action would be consistent with the purpose of the Northwest Forest Plan by furthering habitat protection while providing for a viable forest products industry on forestlands regulated by the Washington Forest Practices Act. This would be accomplished through measures aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes, and implementation of road maintenance and abandonment plans, while also fostering a viable and responsible forest products industry. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4 would not none of the alternatives would contribute as effectively as Alternative 2 to Northwest Forest Plan strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).
Chapter 5

Columbia River Gorge National Scenic Area

The states of Oregon and Washington entered into a compact pre-authorized by Congress to implement the Columbia River Gorge National Scenic Area Act (16 U.S.C. §§ 544, et seq.; RCW Chapter 43.97; 16 U.S.C. § 544c). The Act established a national scenic area in 1986 to protect and enhance the scenic, cultural, recreational, and natural resources of the Columbia River Gorge; to support the economy of the area by encouraging growth to occur in urban areas; and to allow economic development consistent with resource protection. The Act encompasses 300,000 acres of scenic vistas; habitat for rare, threatened and endangered plants, animals, and anadromous fish; ancient Indian rock art and other cultural sites; and privately owned timber, farmland, and orchards.

A bi-state agency, the Columbia River Gorge Commission, was authorized by the Act to develop and adopt a land use and resource protection policy. The Columbia River Gorge Commission works closely with State and Federal agencies and tribal and community partners to accomplish its goals.

The Act’s special management area guidelines were established and apply to all forest practices within the Columbia River Gorge National Scenic Area special management area, along with the Washington Forest Practices Rules. The Washington DNR consults with the U.S. Forest Service and the Columbia River Gorge Commission when reviewing forest practices applications or notifications within the Columbia River Gorge National Scenic Area special management area, and prior to making any determination.

Cumulatively, the proposed action and the Columbia River Gorge National Scenic Area Act would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the Columbia River Gorge National Scenic Act would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the purpose of the Columbia River Gorge National Scenic Area Act is to protect and enhance the scenic, cultural, recreational, and natural resources of the Columbia River Gorge; to support the economy of the area by encouraging growth to occur in urban areas; and to allow economic development consistent with resource protection. Implementation of the proposed action would be consistent with this purpose by fostering a viable and responsible forest products industry while also furthering aquatic resource protection on forestlands regulated by the Washington Forest Practices Act. This would be accomplished through measures aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes, and implementation of road maintenance and abandonment plans. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4 would not contribute as effectively as Alternative 2 to Columbia River Gorge National Scenic Act strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of...
reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

5.2.2.2 State Statutes, Regulations, Plans, and Programs

Washington Department of Ecology Water Quality Plans and Programs

The Washington State Water Pollution Control Act (RCW Chapter 90.48) designates the Ecology as the agency responsible for carrying out provisions of the Clean Water Act using its own independent regulatory authority. Ecology establishes Washington’s water quality standards, pursuant to periodic review and approval by EPA to ensure protection of beneficial uses based on best available science. Ecology and may directly enforce provisions of the Clean Water Act, or may use the State’s water quality statutes and rules. Temperature requirements for multiple species, including stream-associated amphibians and macro-invertebrates were considered during development of the 2003 State Water Quality Standards; sensitive “key species” were selected to aid in identifying aquatic communities requiring unique temperature criteria to ensure all the resident species are fully protected.

The Clean Water Act established a process to identify and clean up polluted waters. Every 2 years, states are required to prepare a list of water bodies that do not meet State water quality standards. This list is referred to as the 303(d) list because it is described in Section 303(d) of the Clean Water Act. Before compiling the list, Ecology develops, through a public process, a listing policy that describes how Ecology will determine which water bodies are included on the 303(d) list.

The Clean Water Act requires that a water cleanup plan, also known as a total maximum daily load (TMDL), be developed for each of the water bodies on the 303(d) list. A TMDL is the maximum amount of pollution or “pollutant load” that a water body can assimilate without violating water quality standards. A water body stays on the 303(d) list until a TMDL has been developed for it, its pollution problem is addressed through some other pollution control process, or it meets water quality standards. Ecology monitors the effectiveness of TMDLs and other pollution controls, and if found to be ineffective, can relist the water body and require more stringent pollution controls.

In response to litigation on TMDLs in 1992, EPA and Ecology developed a Memorandum of Agreement stipulating that TMDLs for all of the water bodies on the State’s 1996 303(d) list would be completed by 2013.

Each TMDL has five major components:

1. An identification of the type, amount, and sources of water pollution in a particular water body or segment;
2. A determination of the capacity of the water to assimilate pollution and still remain healthy;
3. An allocation showing how much pollution each source will be allowed to discharge;
Chapter 5

4. A strategy to attain the allocations; and

5. Implementation of a monitoring plan to assess effectiveness as the TMDL.

For pollution coming from point sources, identifying sources and developing a TMDL implementation strategy is usually straightforward. “Point sources” are locations from which discharge occurs from a specific source(s), such as industrial plants or municipal wastewater treatment plants. Ecology permits regulate point sources, so the TMDL discharge limit is included in the permit.

For pollution coming from non-point sources, implementing a TMDL is more complicated. “Non-point source” pollution is generated by a wide variety of land uses, including forest practices. Loss of shade to a stream, sediment-laden runoff from a poorly maintained forest road, or pesticide over spray reaching surface water are all examples of non-point pollution that can result from forest practices. For non-point sources, a TMDL must evaluate potential methods to control the pollutants and suggest an array of methods that can be used. These methods are referred to as best management practices (BMPs). Usually there are many BMPs that could be used to address a non-point source pollution problem. It is up to the landowner to select and implement the array of practices that will address the pollution generated on their property.

The process of identifying polluted waters, developing and implementing TMDLs, and monitoring 303(d) listed waters is not the only approach Ecology uses to maintain water quality in the State. Water quality is also protected through implementation of the Washington Forest Practices Rules.

Ecology has a unique role in adoption and implementation of the Washington Forest Practices Rules because the Washington Forest Practices Act and rules were designed and adopted, in part, to meet requirements of the Clean Water Act and State water quality standards. The Forest Practices Board is the agency responsible for adopting the Washington Forest Practices Rules. However, for those sections of the rules pertaining to water quality protection, the Forest Practices Board must reach agreement with the director of Ecology, or the director’s designee on the Forest Practices Board, prior to rule adoption (RCW Chapter 76.09.040(1)(e)). Washington DNR implements and enforces the rules. Ecology also has authority to independently enforce the “water quality” sections of the rules (RCW Chapter 76.09.100), and has a continuing obligation to seek adjustments to Forest Practices Rules and Guidance through Adaptive Management when necessary to ensure they meet or exceed water quality standards.

Cumulatively, the proposed action and the Washington State Water Pollution Control Act would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the Washington State Pollution Control Act would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals and continued improvements to water quality conditions. As stated above, the purpose of the Washington State Water Pollution Control Act is to establish a process to identify and clean up polluted waters. Implementation of the
proposed action would be consistent with this purpose by working to protecting and
restoring aquatic resources on forestlands regulated by the Washington Forest Practices
Act as compared to current conditions. This would be accomplished through measures
aimed at protecting riparian habitat and aquatic resources such as RMZs, no-harvest
buffers around unstable slopes, and implementation of road maintenance and
abandonment plans. Consistent with Ecology’s policy guidance for Section 303(d)
listings (Washington Department of Ecology 2002d), the proposed action would also
employ adaptive management as a primary component to reduce scientific uncertainty
and to determine the effectiveness of the protection measures. Cumulatively, both No
Action Alternative scenarios, Alternative 3, and Alternative 4 would not contribute as
effectively as Cumulatively, none of the alternatives would contribute as effectively as
Alternative 2 to Washington State Pollution Control Act strategies that protect listed
species. The reasons for this lower level of effectiveness include lack of regulatory
assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding
for adaptive management and potential increases in forestland conversion as a result of
reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers
that would be economically prohibitive for some landowners to maintain (Alternative 4).

Hydraulic Project Approvals
The 1949 Hydraulic Code (RCW Chapter 75.20.100-160) gives regulatory authority to
Washington Department of Fish and Wildlife (WDFW) to issue a Hydraulic Project
Approval for any construction activity in or near State waters. A Hydraulic Project
Approval is also required for work that will use, divert, obstruct, or change the natural
flow or bed of any waters of the State. The purpose of the law is to ensure that any
construction carried out in or near waters, has minimal adverse impact to Washington
State’s fish, shellfish, and their habitat (Washington Department of Fish and Wildlife
2003). The Hydraulic Project Approval may include site-specific mitigation measures.
A Hydraulic Project Approval is required for forest practices involving activities in or
near many State waters. Examples of forestry activities in or near streams that may
require a Hydraulic Project Approval include, but are not limited to: felling and yarding
timber, the construction or repair of culverts and bridges, placement of LWD, dredging,
debris removal, changes in channel structure, and the placement of outfall structures
(Washington Department of Fish and Wildlife 2003).

Cumulatively, the proposed action and the Hydraulic Code would continue to protect
listed species in the State of Washington through compatible resource management.
Cumulatively, the proposed action and the Hydraulic Code would continue to improve
conditions for listed species across the analysis area, as compared to current conditions
and past impacts, through compatible resource management goals. As stated above, the
purpose of Hydraulic Code is to ensure that any construction carried out in or near
waters, has minimal adverse impact to Washington State’s fish, shellfish, and their
habitat. Implementation of the proposed action would be consistent with this purpose by
furthering aquatic habitat protection on forestlands regulated by the Washington Forest
Practices Act. This would be accomplished through measures aimed at protecting
riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes,
and implementation of road maintenance and abandonment plans. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4 would not contribute as effectively as Alternative 2 to Hydraulic Code strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

Wild Salmon Policy

The Washington Fish and Wildlife Commission adopted the State of Washington’s Wild Salmon Policy in 1997 in response to the proposed and final listings of several salmon stocks. Like comparable Federal programs, the document contains policy recommendations aimed at protecting, restoring, and enhancing fisheries in Washington. Cumulatively, the proposed action and the Wild Salmon Policy would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the Wild Salmon Policy would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the Wild Salmon Policy contains policy recommendations aimed at protecting, restoring, and enhancing fisheries in Washington. Implementation of the proposed action would be consistent with these policy recommendations by furthering aquatic habitat protection on forestlands regulated by the Washington Forest Practices Act. This would be accomplished through measures aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes, and implementation of road maintenance and abandonment plans. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4 would not contribute as effectively as Alternative 2 to Wild Salmon Policy strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

Comprehensive Watershed Planning Act

The 1998 Comprehensive Watershed Planning Act complements the Salmon Recovery Act by providing for locally led, cooperative efforts to assess water resource needs and by developing effective solutions on a Water Resource Inventory Areas (WRIA) (or watershed) basis. These watershed plans assist the State’s overall efforts to manage growth, protect threatened and endangered salmon runs, and improve water quality. The plans encourage the integration of existing laws, rules, or ordinances that protect, restore, or enhance fish habitat, including the Washington Forest Practices Rules (RCW Chapter 90.82.100). See subsection 3.5 (Relationship to Other Plans) and DEIS Appendix A.
(Regional Summaries) for more information on regional watershed planning efforts in support of salmon recovery.

Cumulatively, the proposed action and the 1998 Comprehensive Watershed Planning Act would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the Comprehensive Watershed Planning Act would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the 1998 Comprehensive Watershed Planning Act provides for locally led, cooperative efforts to assess water resource needs and allows for development of effective solutions on a WRIA basis. Implementation of the proposed action would be consistent with the 1998 Comprehensive Watershed Planning Act by furthering aquatic resource protection on forestlands regulated by the Washington Forest Practices Act. This would be accomplished through measures aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes, and implementation of road maintenance and abandonment plans.

Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4 would not contribute as effectively as Alternative 2 to Comprehensive Watershed Planning Act strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

State Listing of Endangered, Threatened, and Sensitive Species

WDFW maintains a list of State endangered, threatened, and sensitive species (WAC 232-12-014 and 232-12-011). In 1990, the Washington Fish and Wildlife Commission adopted procedures that identify how species are listed, criteria for listing and de-listing, and requirements for management and recovery plans (WAC 232-12-297). These lists are separate from the Federal ESA lists because they focus on a species’ status exclusive to Washington State. Critical wildlife habitats associated with State or federally listed species are identified in WAC 222-16-080.

Forest practices that are proposed within critical wildlife habitats associated with State-listed species are considered Class IV Special activities. Compliance with SEPA guidelines and policies is required. Washington DNR is also required to consult with WDFW regarding the protection of listed species’ habitats when reviewing forest practices applications.

Cumulatively, the proposed action and the State listing of endangered, threatened, and sensitive species would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the State listing of endangered, threatened, and sensitive species would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, State
Chapter 5

listing of endangered, threatened, and sensitive species includes criteria for listing and de-listing and requirements for management and recovery plans. Implementation of the proposed action would be consistent with State listing by furthering aquatic resource protection to limit impacts on threatened and endangered species on forestlands regulated by the Washington Forest Practices Act. This would be accomplished through measures aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes, and implementation of road maintenance and abandonment plans. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4, would not contribute as effectively as Alternative 2 to State listing of endangered, threatened, and sensitive species strategies actions that protect federally listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

**Shoreline Management Act**

The Shoreline Management Act was passed by the Legislature in 1971 and is intended To provide for the management of the shorelines of the State by planning for and fostering all reasonable and appropriate uses. This policy is designed to insure the development of these shorelines in a manner, which, while allowing for limited reduction of rights of the public in the navigable waters, will promote and enhance the public interest. This policy contemplates protecting against adverse effects to the public health, the land and its vegetation and wildlife, and the waters of the State and their aquatic life, while protecting generally public rights of navigation and corollary rights incidental thereto (RCW Chapter 90.58.020).

The Shoreline Management Act applies to more than 2,300 miles of lakeshores, 16,000 miles of streams, and 2,400 miles of marine shoreline all designated as “Shorelines of the State” (Washington Department of Ecology 1999b). The Shoreline Management Act establishes a balance of authority between local and State government and is implemented by Ecology and the relevant local governmental entity. Cities and counties are the primary regulators, but Ecology retains the authority to review local programs and permit decisions (Washington Department of Ecology 1999b). Shorelines of the State that are regulated by the Shoreline Management Act include (Washington Department of Ecology 1999b; RCW Chapter 90.58.030(20)):

- All marine waters
- Streams with greater than 20 cubic feet per second mean annual flow
Chapter 5

- Lakes 20 acres or larger
- Upland areas called shorelands that extend 200 feet landward from the edge of the ordinary high water mark and may include up to the entire 100 year floodplain, and wetlands and river deltas when they are associated with one of the above

Cities and counties with waters that meet the definition under Shorelines of the State are required to develop a Shoreline Master Program that regulates uses of the shorelines and is consistent with the Shoreline Management Act (RCW Chapters 90.58.070 and 90.58.080).

Type 1 waters are defined by the Washington Forest Practices Rules as those inventoried as Shorelines of the State under RCW Chapter 90.58 and regulated under the Shoreline Management Act (WAC 222-16-030(1)), including their wetlands. Forest practices operations must comply with the rules under the local city or county Shoreline Master Program, or the Washington Forest Practices Rules, whichever is the most protective of the resource. Substantial developments along these shorelines require a special permit from the local city or county responsible for administering the Shoreline Management Act (RCW Chapter 90.58.140(2)).

The Shoreline Management Act also designates certain waters as “Shorelines of Statewide Significance” where, in their management, “the interests of all the people shall be paramount” (RCW Chapter 90.58.020). These waters are defined in the Shoreline Management Act as (Washington Department of Ecology 1999b):

- Pacific Coast, Hood Canal, and certain Puget Sound shorelines
- All waters of Puget Sound and the Strait of Juan de Fuca
- Lakes or reservoirs with more than 1,000 surface acres
- Larger rivers (1,000 cubic feet per second or greater mean annual flow for rivers in Western Washington, 200 cubic feet per second and greater mean annual flow east of the Cascade crest)
- Shorelands and wetlands associated with all of the above
- All other areas of Puget Sound and the Strait of Juan de Fuca below extreme low water

Landowners wishing to harvest timber within 200 feet of Shorelines of Statewide Significance are permitted only selective commercial timber cutting, and may harvest no more than 30 percent of the merchantable trees within a 10 year time frame (RCW Chapter 90.58.150). Exceptions are provided only in limited cases where topography, soil conditions, or silvicultural practices necessary for regeneration render selective logging ecologically detrimental. Clearcutting may be permitted if it is solely incidental to the preparation of land for other uses authorized by the Shoreline Management Act (RCW Chapter 90.58.150).

Cumulatively, the proposed action and the Shoreline Management Act would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the Shoreline Management Act
Chapter 5

would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the Shoreline Management Act provides for the management of shorelines of the State by planning for and fostering all reasonable and appropriate uses while protecting against adverse effects to public health, the land and its vegetation and wildlife, and the waters of the State and their aquatic life. Implementation of the proposed action would be consistent with the Shoreline Management Act by allowing for timber management activities while protecting against adverse effects to aquatic resources on forestlands regulated by the Washington Forest Practices Act. This would be accomplished through measures aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes, and implementation of road maintenance and abandonment plans. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4 would not contribute as effectively as Alternative 2 to Shoreline Management Act strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

Washington Pesticide Laws and Regulations

The Washington State Department of Agriculture regulates the distribution, use, and disposal of pesticides and fertilizers in Washington State (RCW Chapter 15.58). Landowners who apply pesticides for forest management are required to keep records of their applications pursuant to the applicator requirements of the General Pesticide Rules (WAC 16-228-1320). The Department of Agriculture may also require landowners to obtain a pesticide license to apply certain “restricted use” pesticides that pose a potential threat to humans or the environment (Washington State Department of Agriculture 2002; RCW Chapter 15.58.160(2)(a); RCW Chapter 7.21). Both the Washington DNR and Ecology enforce regulations regarding the handling, storage, and application of pesticides, fertilizers, and other forest chemicals to ensure compliance with all Washington Forest Practices Rules relating to forest chemicals (WAC 222-38).

Forest practices applications or notifications are not required for forest practices conducted to control exotic forest insect or disease outbreaks, when conducted by or under the direction of the Department of Agriculture, and when ordered by the governor or the director of the Department of Agriculture. Forest practices applications or notifications are also not required when emergency pest control measures are conducted by the Washington DNR under a forest health emergency declaration by the Commissioner of Public Lands (RCW Chapter 76.09.060 (8)).

Cumulatively, the proposed action and the Washington Pesticide Laws and Regulations would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the Washington Pesticides
Laws and Regulations would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the Washington Pesticide Laws and Regulations regulate the distribution, use, and disposal of pesticides and fertilizers in Washington State. Implementation of the proposed action would be consistent with Washington Pesticide Laws and Regulations as these requirements would continue to be enforced on forestlands regulated by the Washington Forest Practices Act. This would be accomplished through measures aimed at restricting the type and method of pesticide application near riparian areas and associated water bodies. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4, would not one of the alternatives would contribute as effectively as Alternative 2 to Washington Pesticide Laws and Regulations strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

**Growth Management Act**

The Growth Management Act was passed in 1990 out of concern that population growth and suburban sprawl were threatening Washington’s ecosystems and quality of life (Growth Management Services 1999). The Growth Management Act requires local governments to develop growth management plans for their communities including growth planning, the establishment of urban growth boundaries (or “Urban Growth Areas”), the designation and protection of critical areas (such as wetlands, unstable slopes, fish and wildlife habitat conservation areas, and floodplains), and the classification and designation of resource lands (forest, agricultural, and mineral lands) (Growth Management Services 1999). While the specific requirements under the Growth Management Act are different for cities and counties depending on their size and rate of growth, all local governments have some planning requirements and must develop their own regulations consistent with their Growth Management Act plans (Growth Management Services 1999).

Much of the forestland covered under the Forest Practices Habitat Conservation Plan (FPHCP) has been designated under the Growth Management Act as “resource lands,” which requires cities and counties to develop special policies for their use and conservation (Growth Management Services 1999). Forest practices activities that occur in designated urban growth areas must also comply with the local jurisdiction’s critical areas ordinances, and these ordinances must be at least as protective as the current Washington Forest Practices Rules. If the local jurisdiction has assumed regulatory authority for all Class IV General Forest Practices, the local forest practices regulations must be as protective as the state Forest Practices Act and Rules at the time of adoption. Cumulatively, the proposed action and the Growth Management Act would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the Growth Management Act...
would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the Growth Management Act requires the designation and protection of critical areas and the classification and designation of resource lands. Implementation of the proposed action would be consistent with the Growth Management Act by furthering protection of many of these same critical areas on forestlands regulated by the Washington Forest Practices Act. In addition, forest practices conducted within Urban Growth Areas must comply with both the Washington Forest Practices Act and Rules as well as the local jurisdictions critical areas ordinance.

Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4 would not contribute as effectively as Alternative 2 to Growth Management Act strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

**State Conservation Areas**

Washington DNR’s Natural Resource Conservation Areas and Natural Area Preserves include lands managed by the State to conserve important native ecosystems, rare plant and animal species, and unique natural features. Natural Area Preserves protect the best remaining examples of many ecological communities including rare plant and animal habitat. The Natural Area Preserves system presently includes 26,400 acres on 47 sites distributed throughout the State. In eastern Washington, habitats protected on preserves include outstanding examples of arid land shrub-steppe, grasslands, vernal ponds, oak woodlands, subalpine meadows and forest, ponderosa pine forests, and rare plant habitats. Western Washington preserves include five large coastal preserves supporting high quality wetlands, salt marshes, and forested buffers. Other habitats include mounded prairies, sphagnum bogs, natural forest remnants, and grassland.

Twenty-five Natural Resource Conservation Areas, totally more than 80,500 acres in Washington, protect outstanding examples of native ecosystems, habitat for endangered, threatened and sensitive plants and animals, and scenic landscapes. Habitats protected in Natural Resource Conservation Areas include coastal and high elevation forests, alpine lakes, wetlands, scenic vistas, nesting birds of prey, rocky headlands, and unique plant communities. Critical habitat is provided for many plant and animal species, including rare species. Conservation areas also protect geologic, cultural, historic, and archeological sites.

Other conserved and protected State lands in Washington include lands managed by the Washington State Parks and Recreation Commission. The Washington State Parks and Recreation Commission enhances and protects a diverse system of recreational, cultural, historical, and natural sites, located in 120 State parks encompassing over 250,000 acres.
Chapter 5

Cumulatively, the proposed action and the State Conservation Areas and Natural Area Preserves would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the strategies of the State Conservation Areas and Natural Area Preserves would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the State Conservation Areas and Natural Area Preserves serve to conserve important native ecosystems, rare plant and animal species, and unique natural features. Implementation of the proposed action would be consistent with the State Conservation Areas and Natural Area Preserves by furthering protection of sensitive sites on forestlands regulated by the Washington Forest Practices Act. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4, would not none of the alternatives would contribute as effectively as Alternative 2 to State Conservation Areas and Natural Areas Preserves strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

Washington DNR State Trust Lands Habitat Conservation Plan

The largest HCP in Washington is the Washington DNR State Trust Lands HCP (Washington DNR 1997d). The multi-species HCP, one of the most comprehensive HCPs in the Nation, covers approximately 1.6 million acres of State trust land. The HCP covers all Washington DNR-managed forestlands within the range of the northern spotted owl. This includes all of the western part of the State as well as lands on the east slopes of the Cascade Range, covering approximately 7 percent of all forestlands in Washington State.

The HCP minimizes and mitigates for the incidental take of all federally listed species within the range of the northern spotted owl, including the following listed species: northern spotted owl, marbled murrelet, Oregon silverspot butterfly, Aleutian Canada goose, peregrine falcon (which has since been federally delisted), bald eagle, gray wolf, grizzly bear, and the Columbia white-tailed deer. The HCP also provides protection for 39 additional species, including various mollusks, arthropods, fish species (including all federally listed salmon, steelhead, and native trout), amphibians, reptiles, birds, and mammals (Washington DNR 1997d; USFWS 2003b).

The State Trust Lands HCP includes a riparian conservation strategy to protect salmonid habitat in western Washington (Washington DNR 1997d). The RMZ prescriptions consist of an inner riparian buffer and an outer wind buffer where needed. The primary purpose of the riparian buffer is to maintain or restore salmonid freshwater habitat and to contribute to the conservation of other aquatic and riparian-associated species, while the function of the wind buffer is to protect the riparian buffer (Washington DNR 1997d, p. 56). The State Trust Lands HCP also includes measures that address wetlands, unstable slopes, roads, and rain-on-snow hydrology.
Chapter 5

Cumulatively, the proposed action and the Washington DNR State Trust Lands HCP would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and Washington DNR State Trust Lands HCP would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the Washington DNR State Trust Lands HCP minimizes and mitigates for the incidental take of all federally listed species within the range of the northern spotted owl. Implementation of the proposed action would be consistent with the Washington DNR State Trust Lands HCP by furthering the protection of aquatic and riparian habitat on forestlands regulated by the Washington Forest Practices Act. This would be accomplished through measures aimed at protecting riparian and aquatic habitats such as RMZs and no-harvest buffers around unstable slopes. The Washington DNR State Trust Lands HCP defers to the Forest Practices Act and Rules for road construction, maintenance, and abandonment requirements.

Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4, would not provide the same level of effectiveness as Alternative 2 to Washington DNR State Trust Lands Habitat Conservation Plan-HCP strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

State Salmon Recovery Strategy

The 1998 Salmon Recovery Act represents a statewide effort to improve salmon habitat and is part of a statewide salmon recovery strategy. The Act creates the Governor’s Salmon Recovery Office and a Salmon Recovery Funding Board to support salmon recovery, establishes and assigns regional councils as “Lead Entities” for salmon habitat improvement efforts, puts forth a critical timeline for salmon recovery, and establishes an Independent Science Panel to assist in oversight and scientific review.

The Salmon Recovery Act also recognizes that the Washington Forest Practices Rules, consistent with the FFR, contribute substantially to the recovery of salmonids and protection of water quality. The Salmon Recovery Act designated the Forests and Fish process as the “forestry module” of the statewide recovery strategy.

The primary purpose of the Governor’s Salmon Recovery Office is to coordinate and assist in the development of regional and local salmon recovery plans and efforts. In pursuit of this goal, the Governor’s Joint Natural Resource Cabinet published a 1999 comprehensive report, Statewide Strategy to Recover Salmon: Extinction is Not an Option. The Statewide Strategy provides overarching goals and strategies for salmon recovery in all four factors that influence the health of salmon: habitat, harvest, hatcheries, and hydropower – commonly referred to as the “four H’s” (subsection 4.8.4, Synthesis by Analysis Region) (Federal Caucus 1999). It addresses land use issues,
growth management plans, critical area ordinances, and shorelines programs to protect
salmon, salmon habitat, water quality, and water quantity. The following paragraphs
describe several of the larger regional planning efforts for salmon recovery.

Counties, tribes, businesses, and other interested groups have joined forces across the
State to support salmon recovery through regional watershed-based strategies. Many of
these regional strategies implement the 1998 Watershed Planning Act and serve to assess
the status of water resources within a WRIA or in a group of WRIs. Activities within
the WRIs include: watershed studies, riparian revegetation projects, recruitment of
LWD, fish barrier removal projects, and the facilitation of conservation easements. The
goal of these planning efforts is to protect and preserve salmon habitat and water quality
and, ultimately, to lead to the de-listing of threatened and endangered salmonid species.
The Salmon Recovery Funding Board, established within the Governor’s Salmon
Recovery Office, provides financial support for a number of the following regional
salmon recovery planning efforts.

Puget Sound

The Shared Strategy for the Recovery of Salmon in Puget Sound (Shared Strategy)
encompasses the watersheds surrounding Puget Sound. It is a collaborative effort
involving local citizens, tribes, watershed planning groups, large stakeholder groups
working in the watersheds, State agencies, Federal agencies, and local government
agencies to create a recovery plan to protect and restore salmon runs, recover listed
species, and improve conditions in the entire ecosystem.

In addition, the Tri-County Salmon Recovery Initiative heads up recovery efforts in the
central Puget Sound area covering the three most populous and urbanized counties -
Snohomish, King, and Pierce. Along with the county governments, other contributors to
the planning effort to protect and recover listed species include Federal and State
agencies, tribes, local communities, businesses, and environmental organizations (Salmon
Info Center 2003; Joint Natural Resources Cabinet 1999). This group faces the particular
challenge of protecting and restoring aquatic resources in an increasingly urbanized
environment.

Lower Columbia River

The Lower Columbia Fish Recovery Board develops salmon recovery plans for all ESA-
listed salmon (bull trout, chinook, chum, and steelhead) in Clark, Cowlitz, Lewis,
Wahkiakum, and Skamania Counties and includes members from the Cowlitz Tribe,
county commissioners, citizens, and private interests. The Lower Columbia Fish
Recovery Board was created by the Legislature in 1998 and aims to implement watershed
conservation strategies for waters from the White Salmon River to the mouth of the
Columbia River (Lower Columbia Fish Recovery Board 2003; Joint Natural Resources
Cabinet 2002).

Upper Columbia River

The Upper Columbia Salmon Recovery Board includes representatives of Chelan,
Okanogan, and Douglas Counties, the Confederated Tribes of the Colville Reservation,
and the Yakama Nation. The Forest Practices Board is developing fish and wildlife plans for watersheds in north central Washington (Joint Natural Resources Cabinet 2002).

**Snake River**

The Snake River Salmon Recovery Board includes citizen and technical representatives from Walla Walla, Garfield, Asotin, Columbia, Franklin, and Whitman Counties, the Nez Perce Tribe, Confederated Tribes of Umatilla Indian Reservation, and partnerships with State and Federal agencies. The Snake River Salmon Recovery Board coordinates salmon recovery projects, and is developing an HCP for the Walla Walla watershed (Snake River Salmon Recovery Board 2001; Joint Natural Resources Cabinet 2002).

**Middle Columbia River**

The Yakima Subbasin Fish and Wildlife Planning Board includes counties, cities, and the Yakama Nation, and is working on draft regional fish and wildlife plans that address ESA-listed fish.

**Other Groups**

In addition, the WDFW administers and funds, with support from the U.S. Fish and Wildlife Service (USFWS), groups known as Regional Fisheries Enhancement Groups. The Regional Fisheries Enhancement Groups develop and implement habitat projects including habitat restoration, fish passage barrier removal, erosion control, along with projects for salmon production, stream nutrient enrichment, watershed monitoring, and education and outreach to encourage watershed stewardship (Joint Natural Resources Cabinet 2002). The groups include the Nooksack Salmon Enhancement Association, Skagit Fisheries Enhancement Group, Stilly-Snohomish Fisheries Enhancement Task Force, Mid-Sound Regional Fisheries Enhancement Group, Hood Canal Salmon Enhancement Group, South Puget Sound Salmon Enhancement Group, North Olympic Salmon Coalition, Pacific Salmon Coalition, Chehalis Basin Fisheries Task Force, Willapa Regional Fisheries Enhancement Group, Lower Columbia River Fisheries Enhancement Group, Eastern Washington Fisheries Enhancement Group, Tri-State Steelheaders Regional Fisheries Enhancement Group, and Upper Columbia Fisheries Enhancement Group.

Cumulatively, the proposed action and the State Salmon Recovery Strategy would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and the State Salmon Recovery Strategy would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the State Salmon Recovery Strategy represents a statewide effort to improve salmon habitat. Implementation of the proposed action would be consistent with the State Salmon Recovery Strategy by furthering aquatic habitat protection on forestlands regulated by the Washington Forest Practices Act. This would be accomplished through measures aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes, and implementation of road maintenance and abandonment plans. Cumulatively, both No Action Alternative
scenarios. Alternative 3, and Alternative 4 would not, none of the alternatives would
contribute as effectively as Alternative 2 to State Salmon Recovery strategies that protect
listed species. The reasons for this lower level of effectiveness include lack of regulatory
assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding
for adaptive management and potential increases in forestland conversion as a result of
reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers
that would be economically prohibitive for some landowners to maintain (Alternative 4).

Salmon and Steelhead Habitat Inventory and Assessment Program

In 1991, WDFW and the western Washington Treaty Indian Tribes began the Wild Stock
Restoration Initiative to catalog and inventory salmon and steelhead stocks to determine
their population status. The first product of this partnership was the Salmon and
Steelhead Stock Inventory (also known as the SASSI Report), which delineated fish
stocks, and determined their origin and status.

In 1995, as a continuation of the Wild Stock Restoration Initiative and the work
completed in SASSI, the Salmon and Steelhead Habitat Inventory and Assessment
Program began. The program is co-managed by the WDFW and the Northwest Indian
Fisheries Commission. With the help of partner organizations throughout the Pacific
Northwest, and funding from the Governor’s Salmon Recovery Office, the Salmon and
Steelhead Habitat Inventory and Assessment Program collects information about habitat
conditions and fish stocks and consolidates it into a single database. It is an important
tool that assists resource managers in identifying habitat restoration projects having the
greatest benefit to fish. Computer generated maps are available that allow the user to
view salmon conditions over a large geographic area, or to find information on a single
stream segment. It helps those working to restore salmon habitat to:

- Analyze habitat conditions
- Identify barriers to salmon migration
- Identify and prioritize habitat protection and restoration projects
- Develop recovery plans

The Salmon and Steelhead Habitat Inventory and Assessment Program currently covers
WRIAs 1-23 (western Washington). Work is partially funded and underway to extend
program coverage to WRIAs 24-62 (eastern Washington). Twenty-nine partner
organizations throughout the Pacific Northwest include colleges and universities; Federal,
State, and local governments; conservations groups; western Washington Treaty Indian
Tribes; the Yakama Nation; and the Confederated Tribes of the Colville Reservation.

Cumulatively, the proposed action and the Salmon and Steelhead Habitat Inventory and
Assessment Program would continue to protect listed species in the State of Washington
through compatible resource management. Cumulatively, the proposed action and the
Salmon and Steelhead Habitat Inventory and Assessment Program would continue to
improve conditions for listed species across the analysis area, as compared to current
conditions and past impacts, through compatible resource management goals. As stated
above, the Salmon and Steelhead Habitat Inventory and Assessment Program establishes
a partnership between the WDFW and the western Washington Treaty Indian Tribes to catalog and inventory salmon and steelhead stocks to determine their population status. Implementation of the proposed action would be consistent with the Salmon and Steelhead Habitat Inventory and Assessment Program by furthering aquatic habitat protection on forestlands regulated by the Washington Forest Practices Act. This would be accomplished through measures aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes, and implementation of road maintenance and abandonment plans. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4 would not contribute as effectively as Alternative 2 to Salmon and Steelhead Habitat Inventory and Assessment Program strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

5.2.2.3 Local Statutes and Regulations and Local and Private Plans and Programs

Private and Local Government Habitat Conservation Plans

Several private timber companies and local government entities have completed HCPs that include aquatic species (Table 5-1). Most of the HCPs prepared in Washington address issues concerning multiple listed wildlife and/or aquatic species. Through cooperation with USFWS and National Marine Fisheries Service (NMFS), the plans allow for management of lands for various uses while ensuring the conservation and protection of threatened and endangered salmon, trout, and steelhead species. The following forest landowner HCPs represent efforts across the State to maintain compliance with the ESA while continuing land management activities.

- Green Diamond Resource Company (formerly Simpson Resource Company) has an HCP for operations on 261,575 acres of forestland in Grays Harbor, Mason, and Thurston Counties in western Washington. The HCP provides coverage for 24 species, among them a number of aquatic species including chinook, chum, and coho salmon, bull trout, coastal cutthroat trout, and steelhead (USFWS 2003b). Aquatic resource protection is based on 49 different geomorphological stream channel classifications.

- Plum Creek Timber Company implements an HCP for bull trout and 25 other species on 169,177 acres of its lands along the Interstate-90 corridor between Seattle and Ellensburg (Plum Creek 1996). The Plum Creek Timber HCP includes a riparian management strategy that consists of five parts: 1) compliance with the Washington Forest Practices Rules, 2) Watershed Analysis, 3) maintenance and protection of over 12,000 acres of riparian habitat areas and wetlands, 4) deferred harvest on stream segments listed as impaired on the Clean Water Act 303(d) list and Wetland
Chapter 5

Management Zones, and 5) an aquatic resources monitoring program (Plum Creek 1996, p. 259).

- West Fork Timber HCP (formerly Murray Pacific) covers multiple terrestrial and aquatic species including bull trout on 53,527 acres in Lewis County (USFWS 2003b). The HCP calls for the creation and maintenance of riparian buffers and no-harvest zones. It also calls for road maintenance and abandonment in accordance with the Washington Forest Practices Rules (Murray Pacific 1995).

- Port Blakely HCP covers the 7,486-acre Robert B. Eddy Tree Farm in Grays Harbor and Pacific Counties. The HCP covers multiple terrestrial and aquatic species including bull trout, coastal tailed frog, Cascades frog, and Van Dyke’s salamander.

Two local governments, the City of Seattle and Tacoma Water, have HCPs for watersheds within their jurisdictions.

- The City of Seattle manages the Cedar River Watershed HCP for 77 species, including bull trout, on 90,545 acres in King County (City of Seattle 1998). The HCP includes a number of riparian and aquatic strategies, including commitments to: eliminate timber harvest for commercial purposes on all land and to set aside that land into an ecological reserve; to commit approximately $27.2 million for a fish and wildlife habitat restoration program; and to remove approximately 38 percent of the forest roads within the watershed in the first 20 years of the HCP (City of Seattle 1998, Executive Summary).

- The Tacoma Water HCP stretches over 15,000 acres of the Green River Watershed and provides protection for 30 species including chum, sockeye, and chinook salmon, coastal cutthroat trout, steelhead, and bull trout.

Cumulatively, the proposed action and private and local government HCPs would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and private and local government HCPs would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, the objectives of private and local government HCPs are generally to allow for the management of lands for various uses while ensuring the conservation and protection of threatened and endangered salmon, trout, and steelhead species. Implementation of the proposed action would be consistent with private and local government HCPs by furthering aquatic habitat protection on forestlands regulated by the Washington Forest Practices Act, while allowing for a viable forest products industry. This would be accomplished through measures aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes, and implementation of road maintenance and abandonment plans. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4, would none of the alternatives would contribute as effectively as Alternative 2 to private and local government HCP strategies that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2), likely reduced support and funding for adaptive management and potential
increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

Land Exchanges and Purchases

Other voluntary efforts that can promote natural resource conservation include land exchanges and purchases among private and public forest landowners. Land exchanges and purchases can serve a variety of purposes, including consolidation for protection of sensitive habitats and corridors, other environmental benefits, management efficiency, and economic benefits. The Interstate 90 land exchange and the Huckleberry land exchange are two of the largest and most recent land exchanges. Both involved a major private forest landowner and the U.S. Forest Service.

Cumulatively, the proposed action and voluntary land exchanges among private and public forest landowners would continue to protect listed species in the State of Washington through compatible resource management. Cumulatively, the proposed action and voluntary land exchanges among private and public forest landowners would continue to improve conditions for listed species across the analysis area, as compared to current conditions and past impacts, through compatible resource management goals. As stated above, many of these exchanges are designed to protect and consolidate sensitive habitats and corridors. Implementation of the proposed action would be consistent with the intended benefits of land exchanges by furthering aquatic habitat protection on forestlands regulated by the Washington Forest Practices Act. This would be accomplished through measures aimed at protecting riparian and aquatic habitats such as RMZs, no-harvest buffers around unstable slopes, and implementation of road maintenance and abandonment plans. Cumulatively, both No Action Alternative scenarios, Alternative 3, and Alternative 4 would not contribute as effectively as Alternative 2 to land exchanges and purchases that protect listed species. The reasons for this lower level of effectiveness include lack of regulatory assurances (No Action Alternative scenarios 1 and 2),- likely reduced support and funding for adaptive management and potential increases in forestland conversion as a result of reduced regulatory assurances (Alternative 3), and requirements for wide riparian buffers that would be economically prohibitive for some landowners to maintain (Alternative 4).

5.3 ANALYSIS OF CUMULATIVE EFFECTS

5.3.1 Air Quality

The main sources of air pollution in western Washington are: motor vehicles (55 percent), industrial (13 percent), and wood stoves (9 percent). The resource parameters for analysis are smoke and dust pollution. Approximately 4 percent is generated from outdoor burning, a portion of which comes from forest management activities (Washington Department of Ecology 2003). Air quality in Washington is generally good or moderate, although some areas do not meet Federal standards on some days. Air quality has improved greatly since 1987 when Washington air violated air quality
standards on 150 days. This figure dropped to 7 days in 1999 (Washington Department of Ecology 2003). However, air pollution in a number of communities in the State is within 10 percent of violating Federal standards for smog (ozone), carbon monoxide, and fine particles. Population growth and economic expansion, which result in more cars on the roads, may push emissions of air pollutants higher.

Smoke and dust pollution are still a problem in some areas, primarily in central and eastern Washington. To address these problems, Ecology implements a program that includes:

- Requiring permits for agricultural burning, land clearing, fire training, and other outdoor burning
- Setting conditions under which burning may be conducted
- Producing daily burn forecasts using local air quality, weather, and burning demand information
- Responding to and resolving complaints related to smoke and dust
- Providing technical assistance to manage and prevent dust and outdoor burning impacts
- Designing and delivering community-education programs, technical assistance, research and demonstration projects
- Fostering development and use of dust mitigation techniques and practical alternatives to burning

Ecology’s goals for improving air quality in areas where smoke and dust are a problem include:

- Reducing emissions from cereal grain stubble burning by 50 percent of the 1998 level by 2005
- Improving and streamlining outdoor burning permit and smoke management systems
- Auditing local burn permit programs to ensure effective and efficient operations
- Fostering the development and use of practical alternatives and BMPs for burning and dust mitigation

Throughout most of Washington, burning on State and private lands to reduce harvest slash is a very minor contributor to air pollution. It is a small part of outdoor burning, which in turn is a very small component of total air pollution (4 percent). This is especially true in western Washington where little broadcast burning of slash occurs and where the normally wet weather contributes to dust control. In those portions of eastern Washington where smoke and dust are still a problem, forest operations on State and private land play a role in regional air quality. However, the alternatives do not directly affect the amount of burning or dust emissions, and the cumulative effects associated with the alternatives would be minor, at most, when compared to current conditions.

As compared to No Action Alternative 1-Scenario 2, No Action Alternative 1-Scenario 1, Alternative 2, and Alternative 3 may have a slightly lower contribution to cumulative air
quality problems from slash burning due to reduced harvest levels. Alternative 4 may reduce this contribution further due to additional harvest restrictions. However, the potential for increased wildfire activity associated with Alternative 4 may periodically offset these reductions.

5.3.2 Land Ownership and Use

The only potential for cumulative effects on land ownership or use that is associated with the alternatives is the issue of forestland conversion, which is the main resource parameter for analysis. As noted in subsection 4.2.3.2 (Forestland Conversion), restrictions of forestland use, and in particular RMZ restrictions, can affect the rate of conversion of forestlands to other uses. While this factor would affect all forest landowners to some degree, it is especially important for small forest landowners in western Washington where population growth rates and development pressures are high (Washington DNR 1998).

It was noted that non-industrial private forestlands in Washington were converted from primary forestland to non-primary forest use between 1979 and 1989 at a rate of almost 100 acres per day (Washington DNR 1998). Non-primary forest use in this study included other land uses, such as residential development, as well as conversion to smaller or less dense parcels of forestland. Most of this conversion occurred in western Washington typically within urban growth boundaries and on the fringes of the suburban/rural interface. Conversion information available from Washington DNR’s Forest Practices Application Review System database indicates that 53,821 acres were converted from forestland to other uses between 1997 and 2003 (Table 3-11). A study conducted by The Wilderness Society that assessed changes in forest cover in King, Pierce, and Kittitas Counties from 1985 to 1999 found that approximately 96,000 acres had been converted from forest to urban development during that period in the three-county study area (Thomson et al. 2003).

Subsection 4.2.3.2 (Forestland Conversion) concluded that the rate of forestland conversion would remain similar to past rates under No Action Alternative 1-Scenario 2, and the rate of conversion would likely increase under the other alternatives. It was concluded that No Action Alternative 1-Scenario 1 would result in reduced stakeholder support and lower funding levels for adaptive management from current levels. Alternative 3 would also be expected to have lower funding levels from adaptive management compared to current levels. Alternative 2 would have stakeholder support and funding levels similar to current levels, which would be expected to be higher than No Action Alternative 1-Scenario 1, and substantially higher than No Action Alternative 1-Scenario 2. Small landowner mitigation viewed in terms of financial compensation would, therefore, be lowest under No Action Alternative 1-Scenario 1, higher under Alternative 3, and highest under Alternative 2.

This effect would likely result in the lowest rate of conversion under No Action Alternative 1-Scenario 2, due to the least RMZ restrictions. Alternative 2 would likely have the next lowest conversion rates even though RMZ restrictions under Alternative 2
would be greater than No Action Alternative 1-Scenario 2. This is because small
landowner compensation programs would likely be well funded under Alternative 2, and
all forest landowners would be afforded substantially more regulatory certainty than
under either scenario of No Action Alternative 1. No Action Alternative 1-Scenario 1
and Alternative 3 are likely to result in increased conversion rates as compared to No
Action Alternative 1-Scenario 2 due to restrictive RMZ rules (relative to No Action
Alternative 1-Scenario 2), a lack of regulatory certainty, and a decrease in small
landowner compensation programs.

RMZ restrictions would be substantially higher under Alternative 4 than under all other
alternatives. As a result, it is likely that the economic viability for forest landowners,
especially small landowners would be substantially lower under Alternative 4, and the
potential for forestland conversion could be substantially higher than under any of the
other alternatives. These types of effects would be particularly likely in the South Puget
Sound and West Puget Sound Regions, as well as the North Puget Sound Region, where
substantial urban development pressures exist, and non-industrial private forestlands are
often located along the urban-wildland interface. Still, county regulations, the proximity
of properties to urban areas, the current real estate market, and other factors would
contribute to how fast conversion could take place under any alternative.

5.3.3 Aquatic Resources

This subsection is divided into three parts. The landscape-level cumulative effects on
water resources and fish and fish habitat are addressed in the first two subsections. This
is followed by a cumulative watershed effects analysis for aquatic resources in general.
The primary resource parameters for review are water quality and flow regimes.

5.3.3.1 Water Resources

Forestlands cover approximately one-half of all lands in Washington State, and the
Washington Forest Practices Rules apply to a substantial portion of these lands on both
the east and westsides of the Cascade crest. Table 3-3 describes the ownership by region
of these forested lands. The importance of the Washington Forest Practices Rules to
regional water quality depends on the percentage of forestlands that are subject to these
rules regionally, as well as to other land uses in the region. For example, the percentage
of protected forestland that is not available for timber production varies substantially
from region to region (subsection 4.8.4, Synthesis by Analysis Region); it ranges from 48
percent in the North Puget Sound Region to less than 1 percent in the Columbia Basin.
Additionally, the impact of forestland conversion would be more of a concern for some
regions than others.

The total percentage of forestland governed by the Washington Forest Practices Rules on
the westside is approximately 62 percent (8.0 million acres) and on the eastside is
approximately 34 percent (3.4 million acres) (these acreages include existing HCP lands).
On the eastside, forestlands contain approximately 46 percent of all stream miles, and on
the westside forestlands contain about 84 percent. Statewide, the percentage of forested
lands that is subject to the Washington Forest Practices Rules and is available for timber
management varies from 17 percent (Upper Columbia-Downstream of Grand Coulee Region) to 93 percent (Southwest Region) (almost 100 percent of the forestlands in the Columbia Basin Region are subject to the Washington Forest Practices Rules, but the Region has a very small acreage of forestlands [13,000 acres]).

Across the State, various statutes, regulations, plans, and programs cover forestland and adjacent lands and are designed to benefit water quality and flows, as well as associated aquatic resources (subsection 5.2.2, Statutes, Regulations, Plans, and Programs). Foremost among these are the Clean Water Act, Northwest Forest Plan, Washington Department of Ecology Water Quality Plans and Programs, and Washington Pesticide Laws and Regulations. The Washington Forest Practices Rules contribute to the protection of surface water resources in concert with these other regulations.

An evaluation of cumulative effects to water resources as a result of the adoption of any of the alternatives on water quality and peak flows can logically be assessed by region in terms of past land and water use and water resources impacts, current land use, and regulations. A description of historic practices and actions that produced the current resource conditions is presented by region in DEIS Appendix A (Regional Summaries). In effect, these regional summaries represent a summary of past and present cumulative effects by region.

The Snake and Columbia Basin Regions should experience the lowest potential for cumulative water quality and peak flow effects due to changes in the Washington Forest Practices Rules because these Regions have a small percentage of forestland, and agriculture is the dominant land use. The Middle Columbia and Upper Columbia Regions (Upstream and Downstream of Grand Coulee Dam) have substantial acreages of forestlands, but land use and land cover are mixed. Additionally, hydropower dams and alterations to surface water flow for agricultural uses are often the overriding concern related to water temperature, sediment, and peak flows.

On the westside of the State, all regions contain substantial amounts of forestland that is affected by the Washington Forest Practices Rules. Only the Olympic Coast and North Puget Sound Regions do not have a majority of the forestlands managed under the Washington Forest Practices Rules (both have 45 percent in forestland under the rules). In both the Islands and Southwest Regions, greater than 90 percent of the forestland is subject to the Washington Forest Practices Rules and, therefore, could experience a substantial local effect from changes in them. However, the Islands Region represents less than 1 percent of lands in the State.

West Puget Sound (57 percent), Lower Columbia (63 percent), and South Puget Sound (73 percent) Regions could experience moderate effects on water quality and peak flows relative to other westside regions. The issue of forestland conversion and urbanization is substantial on the westside, however. Compared to all other regions West Puget Sound contains the largest percentage of stream miles on exempt 20-acre parcels (approximately 5 percent) (Rogers 2003), and presumably a substantial amount of other small forest landowners.
The North and South Puget Sound and Lower Columbia Regions contain urban growth areas associated with Bellingham, Everett, Seattle, Tacoma, Longview, and Vancouver, as well as agricultural lands on mainstem rivers. Forestland conversion to more intense land uses in these Regions and the often accompanying adverse effects of diminished water quality and altered hydrologic regimes would likely vary between the alternatives. Additionally, the potential for landslides varies by region (DEIS Appendix A). All regions in western Washington except the Islands Region have substantial areas of potentially unstable slopes on forestlands, which could affect water quality on a regional scale and vary between the alternatives.

No Action Alternative 1-Scenario 2

In terms of regional and statewide cumulative effects, No Action Alternative 1-Scenario 2 has the greatest likelihood of adverse effects to water quality and peak flows (as compared to current conditions) from rule changes in forested regions, but in some regions this alternative may slow the rate of forestland conversion, partially offsetting these effects (i.e., West, North, and South Puget Sound, and Lower Columbia Regions).

No Action Alternative 1-Scenario 1

No Action Alternative 1-Scenario 1 poses a minimal chance of cumulative effects on water quality and peak flows in the short term as compared to No Action Alternative 1-Scenario 2. However, over time, the potential for adverse cumulative effects increases due to the lack of an effective adaptive management program, as well as the potential for increased forestland conversion. There may be negative effects on water quality and peak flows, particularly in regions that contain a large percentage of small landowners and in close proximity to rapidly growing urban areas. A lack of regulatory certainty and decreases in financial mitigation funding for small landowners are expected to increase the rates of conversion, particularly in the West, North and South Puget Sound, and Lower Columbia Regions. Conducting Watershed Analysis would aid in addressing cumulative effects at the watershed scale, and there may be some incentive for private landowners to do so to gain some State level regulatory stability.

Alternative 2

Alternative 2 represents the current Washington Forest Practices Rules with the assurances of an HCP and, therefore, poses no increased potential for adverse cumulative effects to water quality or peak flows in comparison to current conditions and past impacts. Over time, the potential for adverse cumulative effects would likely decrease due to adaptive management, which would be applied based on regularly scheduled monitoring. Due to long-term regulatory/funding stability, Alternative 2 likely results in the greatest potential for beneficial cumulative effects and the best opportunity to slow, or at least not increase, the rate of forestland conversion. Compared to No Action Alternative 1-Scenario 1, the likelihood of adverse cumulative effects would decrease over time under this alternative. This is due to a fully supported adaptive management program. Compared to No Action Alternative 1-Scenario 2, the likelihood of adverse cumulative effects would decrease immediately due to more restrictive protection.
measures, and would become much less of a concern over time due to a fully supported adaptive management program.

Similar to Alternative 3, Alternative 2 also includes protection measures in two general categories: a riparian strategy and an upland strategy. The riparian strategy includes measures designed to maintain and restore riparian processes that create aquatic habitat, with particular emphasis on LWD recruitment and shade retention, but also including sediment filtration, stream bank stability, litterfall, and nutrients, in addition to other processes important to riparian and aquatic systems. The upland strategy includes measures that apply to upslope areas generally located outside the aquatic and riparian environments. These measures are designed to maintain and restore upslope processes that affect aquatic habitat such as erosion and hydrology that may adversely affect the quality and quantity of riparian and aquatic habitat lower in the watershed. The riparian and upland strategies found in Alternative 2, combined with a fully functioning adaptive management program, would likely result in a decrease in long-term adverse cumulative effects as compared to Alternative 1-Scenario 2.

**Alternative 3**

Alternative 3 represents the current Washington Forest Practices Rules with the assurances of an ESA Section 4(d) rule limit and, therefore, poses no immediate increased potential for adverse cumulative effects on water quality or peak flows as compared to current conditions. Over time the potential for adverse cumulative effects would likely decrease compared to No Action Alternative 1-Scenario 1 due to a more functional adaptive management program, and particularly compared to No Action Alternative 1-Scenario 2 due to more restrictive protection measures and a more functional adaptive management program. However, adaptive management is likely to be less well supported under Alternative 3 compared to current levels and, therefore, would present less certainty in preventing future adverse cumulative effects.

**Alternative 4**

Alternative 4 would have the lowest potential for adverse cumulative effects on water quality and peak flows in the short term compared to all other alternatives and current conditions, particularly No Action Alternative 1-Scenario 2. The regions that would likely benefit the most in terms of reduced adverse impacts to water quality and hydrology under Alternative 4 are Islands, Southwest, and Olympic Coast Regions, followed by South and West Puget Sound, Lower Columbia, and North Puget Sound Regions due to competing land use effects. Eastern Washington regions would be expected to see less of an effect on water quality and peak flows due to competing land use effects, a smaller percentage of land under the Washington Forest Practices Rules, and fewer areas of steep or potentially unstable slopes as compared to western Washington.

Over the long term, forestland conversion rates would be expected to increase due to the economic impacts to forest landowners, especially small landowners. Also, adaptive management would not be well supported under Alternative 4. Forestland conversion,
especially in rapidly growing areas and with high numbers of small landowners (i.e., West, North and South Puget Sound, and Lower Columbia Regions) has the potential to override the benefits of more restrictive rules. Further, a less functional adaptive management program would increase the uncertainty associated with rule effectiveness and may not provide a mechanism for identifying and correcting ineffective management prescriptions. This would likely result in an increasing potential for adverse cumulative effects in the future, or at least uncertainty about the effectiveness of the protection measures over the long term.

5.3.3.2 Fish and Fish Habitat

Washington’s salmon, steelhead, trout, and other species of fish represent an important part of the culture, economy, biology, and history of the State. A host of factors have contributed to the decline of salmon, steelhead, and trout (and some other species) across the State that resulted in the listing of many salmonids as threatened and endangered under the ESA. These factors include agricultural practices, urbanization, forest practices, hydropower dams, barriers to fish movement (such as road crossings), commercial and recreational fish harvest, and hatcheries along with natural factors such as predation and ocean conditions (Joint Natural Resources Cabinet 1999). Many of the factors that have contributed to the decline of salmon, steelhead, and trout are a result of historic practices that have and/or will continue to be improved as knowledge of land use impacts to habitat and species improves. While some practices require much more improvement than others to lessen or halt adverse impacts, they all are important components to salmon recovery.

In addition, the Washington State’s Forest Practices Act + Rules package and Forest Practices Regulatory Program represents only one of many other regulations that include protective measures and protection or conservation strategies for salmon and other aquatic and riparian-dependent species in the State. Plans that benefit fish habitat and water quality in Washington include large, multi-State Federal forest management plans (e.g., the Northwest Forest Plan), State and private landowner Habitat Conservation Plans, local watershed planning efforts, individual conservation and management efforts, and a number of others efforts (subsection 5.2.2, Statutes, Regulations, Plans, and Programs). These are contributing cumulatively to the protection and conservation of Washington’s fish and their habitats. The following analysis focuses on those parameters resulting from factors of decline, which include water quality conditions and associated conservation and recovery efforts.

Western Washington

A very high portion of western Washington (13,007,800 acres or 83 percent) is forested. The Washington Forest Practices Rules regulate commercial timber activities for private holdings on a moderate portion, about 40 percent (6,289,000 acres) of lands, which includes 48 percent of all forestlands in western Washington. The State also manages an additional 11 percent of all lands (13 percent of all forests) primarily under the Washington DNR State Trust Lands HCP (Washington DNR 1997d). Federal and State protected forestlands, not managed for timber harvest, include a moderate portion (about
26 percent) of all westside lands and a moderate portion (32 percent) of all forestlands. Also, Federal and tribal forestlands, available for timber harvest, equal about 6 percent of all westside lands (7 percent of all forestlands).

The portion of streams on affected lands can influence overall cumulative effects to fish and fish habitat. The amount of streams in western Washington is relatively high for the State (125,820 stream miles), having 47 percent of all State streams, but only 36 percent of the land area. But within the western Washington regions, a high portion of all \textit{westside} streams (47 percent) is protected under the Washington Forest Practices Rules. So the alternative actions have the potential to affect a large portion of all western Washington aquatic habitats.

Other land use activities have a major influence on aquatic habitat and fish within western Washington. Currently about 4 percent of the land base is residential/commercial, and 5 percent is agricultural (Table 3-2). Much of this area is along lower reaches of streams that have traditionally been the most productive, so the overall adverse effect of these activities has been much greater than their relative area due to higher intensity land uses (e.g., agricultural, residential, commercial). These lower basin areas, especially along portions of Puget Sound, where the intensity of both urban and agricultural development has been relatively high, have a great influence, typically much more so than forestry, on streams and the aquatic environment. Some of these and additional basin activities, such as hydroelectric projects and past estuary modifications, will likely continue to have cumulative negative effects on aquatic resources, independent of the Washington Forest Practices Rules.

As noted earlier, many of the Federal, and State, and local planning efforts, plans, and programs will have cumulative positive effects on aquatic habitat and fish resources within western Washington (subsection 5.2.2, Statutes, Regulations, Plans, and Programs). These include the following: \(1\) the Northwest Forest Plan (especially in western Washington, USDA Forest Service and USDI Bureau of Land Management 1994); \(2\) Federal recovery plans and those under development for listed salmon species, including Chinook, chum, sockeye, steelhead, and coho (See http://www.nwr.noaa.gov/Salmon-Recovery-Planning/, accessed: December 12, 2005); \(3\) Federal draft recovery plans for bull trout (See: http://www.fws.gov/pacific/bulltrout/recovery.html, accessed: December 12, 2005); \(4\) Shared Salmon Strategy for Puget Sound (http://www.sharesalmonstrategy.org/, accessed: December 12, 2005); \(5\) approved Habitat Conservation Plans (HCPs); and \(6\) and many others. (USDA Forest Service and USDI Bureau of Land Management 1994). As these various plans and programs continue to be implemented, they will complement the strategies under No Action Alternative 1-Scenario 1, and Alternatives 2, 3, and 4, particularly in watersheds with substantial amounts of Federal and private mixed ownership in the Cascades and Olympics. Under No Action Alternative 1-Scenario 2 and the less restrictive protection measures, maintenance of properly functioning streams and
recovery of degraded streams may not be possible in forested watersheds with high proportions of private ownership.

**Eastern Washington**

Due to the arid nature of much of eastern Washington a much smaller portion of the area (9,939,000 acres or 36 percent) is designated as forestlands relative to the westside. The Washington Forest Practices Rules regulate commercial timber activities for private, Washington DNR, and other State holdings on a low portion (about 12 percent or 3,365,000 acres) of all eastside lands, which includes a moderate portion (34 percent) of eastside forestlands. Federal and State protected forestlands, not managed for timber harvest, include a small portion of all lands (9 percent) but a moderate portion (24 percent) of all forestlands. Also, Federal and tribal forestlands available for timber harvest equal about 15 percent of all lands, a relatively high portion (43 percent) of all forestlands.

The portion of streams on affected lands can influence overall cumulative effects to fish resources. The number of streams in eastern Washington, although abundant (139,310 stream miles), is low relative to the westside due to the dry climate, with 53 percent of all streams, but on 64 percent of all lands. Additionally the eastside of the State has a low portion of all streams (16 percent) under the Washington Forest Practices Rules. However, streams covered under the rules make up 35 percent of all forested streams. So while the alternatives have a relatively low potential to cumulatively affect a large portion of aquatic habitat in eastern Washington, they can affect a moderate portion of forested streams, where much of the habitat for listed salmonids is found.

Land use practices on the eastside differ from the westside, but also can have marked cumulative effects on aquatic habitat and resources. Overall, 26 percent of the area is designated as agriculture, 10 percent grasslands, and 25 percent shrubland, with a small portion, about 1 percent, residential/commercial. Outside of forestry, the major land use effects on the eastside are centered on agricultural practices. These include the historical conversion of low-lying areas within river valleys to agricultural lands and a high level of water diversion for irrigation. These practices will be mostly maintained into the future over much of the landscape.

Almost all of the forestlands are upstream of the major agricultural areas and serve as refuge for many of the native fish species. Additional cumulative effects have included extensive hydroelectric and water storage development, which continue to impede the passage of many of the listed anadromous fish stocks in eastside areas. Most stocks will have to migrate past four to nine dams on the Columbia and Snake Rivers on their migration to and from the ocean.

As with the westside, there are many ongoing Federal and State plans and actions that have cumulative positive effects to aquatic habitat and fish resources within eastern Washington. The Northwest Forest Plan, however, only affects only Federal forests along the east slope of the Cascades (USDA Forest Service and USDI Bureau of Land Management 1994); however, other Federal, State, and local planning efforts as
Chapter 5

Chapter 5

described in the western Washington section above, however, also apply to much of eastern Washington. Many Federal, State, and local planning efforts are taking place in the watersheds and basins of eastern Washington with the objective of benefiting aquatic resources in the future and will complement the strategies under No Action Alternative 1-Scenario 1, and Alternatives 2, 3, and 4, particularly in watersheds with substantial amounts of Federal and private mixed ownership. Under No Action Alternative 1-Scenario 2 and its less restrictive protection measures, maintenance of properly functioning streams and recovery of degraded streams may not be possible in forested watersheds with high proportions of private ownership. Future ESA listings may occur that would require additional ESA compliance under No Action Alternative 1-Scenario 1 and No Action Alternative 1-Scenario 2.

Conclusion

The various programs and plans described above reflect a substantial wide-spread effort and financial commitment to improve water quality, putting listed species on a positive trend towards recovery and providing substantial protection for other aquatic and riparian-associated species across the State. For the most part, the strategies and programs are complementary and reflect different land management goals and activities that are needed to maintain economic viability in the region and to meet legal and environmental responsibilities under the ESA and Clean Water Act. While some adverse cumulative effects from the wide variety of land use activities are unavoidable, these effects should diminish over time as the various statutes, regulations, plans, and programs described earlier are implemented. Many of these efforts have been underway for many years; some have just begun or are yet to begin. Thus, it will likely take many years for the various efforts to interact in such a way as to halt and reverse negative cumulative effects. In general, aquatic habitat on forestlands has been less impacted and should recover more quickly than aquatic habitat on agricultural lands or developed lands.

From the perspective of cumulative effects, No Action Alternative 1-Scenario 2 is unlikely to meet the level of protection needed for the long-term recovery and conservation of listed species. In contrast, No Action Alternative 1-Scenario 1 and Alternatives 2 and 3 would provide substantial additional protections over No Action Alternative 1-Scenario 2 that complements other activities in the region and contribute to listed species recovery. Alternative 4 would provide even greater additional protection than No Action Alternative 1-Scenario 2 where management would complement activities in the region, but may or may not achieve more protection for aquatic resources than No Action Alternative 1-Scenario 1. This protection would depend on the rate of forestland conversion that is triggered by land use restrictions.

Unlike No Action Alternative 1-Scenario 1 (and Alternatives 3 and 4), Alternative 2 incorporates a fully supported adaptive management program in the approach, which is widely recognized as a cornerstone to many of the plans, policies, and programs mentioned above. Adaptive management is necessary to determine the effectiveness of the management prescriptions in meeting stated goals and objectives. Consequently, in the long-term, Alternative 2 should result in adequate protection levels that would result
in improvements in water quality, the opportunity for recovery of listed species, and
improved aquatic habitat for fish. While both No Action Alternative 1 scenarios include
some level of adaptive management, it would not be as well funded or well supported by
stakeholders as it would be under Alternative 2 due to less regulatory certainty.
Alternative 4, with much more restrictive protection measures, would be expected to have
a low level of stakeholder and funding support for adaptive management but may still
result in adequate protection levels. However, increased forestland conversion rates in
some areas may diminish some of the resource benefits of more restrictive rules, and
therefore raise the uncertainty associated with this alternative. No Action Alternative 1-
Scenario 2, due to much less restrictive protection measures, would be a very uncertain
approach to achieving aquatic habitat benefits and may likely cause further degradation.

5.3.3.3 Cumulative Watershed Effects

Cumulative watershed effects are defined here as the changes to the environment caused
by the interaction of multiple forest practices taking place within a watershed. Multiple
forest practices include all possible combinations of forest practices including those
occurring on the same site over time, or widely dispersed within the forest, occurring
simultaneously or in a sequential manner (Geppert et al. 1984).

Cumulative watershed effects from forest practices are addressed in the current
Washington Forest Practices Rules. Changes outlined by the alternatives would affect
these rules, as discussed below.

Analysis of Alternatives

Rule changes or modifications to the Washington Forest Practices Rules envisioned
under each of the alternatives that could cumulatively affect water quality and hydrology
include Watershed Analysis, Road Maintenance and Abandonment Plans (RMAPs),
Hydrologic Maturity (rain-on-snow rule), riparian and wetland buffer widths, the fate of
the adaptive management program, and possible changes in the rate of forestland
conversion. These are the resource parameters reviewed in the following analysis.

No Action Alternative 1-Scenario 2

Under this scenario, the Washington Forest Practices Rules would revert back to the rules
in effect prior to January 1, 1999, and no ITP or ESA Section 4(d) rule limit for take
protection would be in place; this would likely lead to a high level of uncertainty
regarding adverse cumulative effects to aquatic resources.

Watershed Analysis is assumed to continue on a voluntary basis, as there could be a
benefit to landowners in the form of State regulatory certainty with respect to forest
practices. However, considering the rate at which watershed analyses were undertaken
and completed under the rules in effect on January 1, 1999, Watershed Analysis (under
No Action Alternative 1-Scenario 2) is unlikely to provide protection to aquatic habitats
within the majority of forested watersheds over the next decade under this scenario, as
compared to current conditions.

Under this alternative, RMAPs would only be required based on Watershed Analysis
prescriptions or Washington DNR request. The lack of a requirement for RMAPs from

Final EIS 5-45  Cumulative Effects
all landowners within a 5-year period increases the uncertainty and potential for mass wasting that could contribute sediment to surface waters.

Under this alternative, there could be less protection for hydrologic impacts as compared to current conditions because there would be less forest cover retained across the landscape, thus increasing the potential for increased peak flows associated with rain-on-snow events. Riparian buffers would be narrower than under current conditions, and in general, fewer restrictions would be placed on landowners for forest management due to potential slope instability than would be expected under the other alternatives.

The effects on adaptive management under this scenario are described in Chapter 2 (Alternatives). It is anticipated that funding and support for the adaptive management program would be degraded or eliminated. With the loss of adaptive management, a program that would effectively monitor forest practices effects on sediment input and water quality and quantity would not likely be implemented. Without the ability to quantify and understand these effects it may be more difficult to manage lands appropriately to meet the goals of ESA and the Clean Water Act.

Adverse economic impacts, especially to small forest landowners, would likely be reduced under this alternative due to fewer regulatory restrictions as compared to current conditions. Economic impacts would vary by watershed, but would likely result in a slower rate of forestland conversion than is currently occurring, as discussed in subsection 5.3.2 (Landownership and Use). A slower rate of forestland conversion, especially at the forest-urban interface could be a net benefit to surface water quality and hydrology in some watersheds, as urbanization of these areas could degrade water quality and increase peak flows in the long term to a greater degree.

**No Action Alternative 1-Scenario 1**

Alternative 1-Scenario 1 anticipates the current Washington Forest Practices Rules, but without an ITP or ESA Section 4(d) rule limits for take protection. Under this scenario, Watershed Analysis may continue on a voluntary basis as there could be a benefit to landowners in the form of State regulatory certainty. RMAPs would still be required from most forestland owners on affected lands by 2016, and rain-on-snow and buffer rules would be to the same as current Washington Forest Practices Rules. Funding and support for adaptive management, however, is expected to degrade due to the lack of regulatory certainty.

Cumulative watershed impacts under this scenario would likely be mixed. Although protection measures would be better than under No Action Alternative 1-Scenario 2, it is likely that the rate of forestland conversion would be higher than current rates. Further, the adaptive management program would not likely be effective at determining if the rules are meeting established resource protection goals and objectives. Therefore, the potential for adverse impacts to aquatic resources at the watershed scale would be somewhat increased over No Action Alternative 1-Scenario 2 due to less effective adaptive management and an expected increase in forestland conversion.

**Alternatives 2 and 3**
THE FOLLOWING NEW TEXT REFLECTS PUBLIC COMMENTS ON THE DEIS

Under Alternatives 2 and 3, the current Washington Forest Practices Rules would remain in effect with take protection provided by an ITP or an ESA Section 4(d) rule limit, respectively. Riparian easement programs would remain in place, reimbursing forest landowners for some of the lost value within RMZs, although the level of funding support would likely be somewhat higher under Alternative 2 than Alternative 3. It is anticipated that forestland conversion rates would remain relatively unchanged, although they may be slightly higher under Alternative 3 compared to No Action Alternative 1-Scenario 2. The rules would be modified over time as a result of adaptive management. However, support for adaptive management would likely be higher under Alternative 2 than Alternative 3.

While ESA Section 4(d) rules under Alternative 3 would give landowners some assurances that take violations from ESA would be minimal to non-existent so long as the Washington Forest Practices Rules were followed, the long-term regulatory certainty associated with a Section 4(d) rule limit would be considerably less than under Section 10 (i.e., issuance of an ITP). Due to more fully supported adaptive management and less conversion of forestland, Alternative 2 would likely have the least potential for adverse watershed cumulative effects. Compared to No Action Alternative 1-Scenario 1, and especially Scenario 2, these alternatives would likely have a lower potential for adverse cumulative effects to aquatic resources at the watershed scale. Also, the riparian and upland strategies described for Alternative 2 are designed to maintain and restore riparian function and upslope processes affecting aquatic habitat to a high degree.

END OF NEW TEXT

**Alternative 4**

Compared to current conditions and to other alternatives, this Alternative 4 could be the most protective in terms of water quality and hydrologic cumulative effects compared to current conditions and to other alternatives, due to activities related to forest management. However, this alternative would increase economic impacts to landowners, especially small forest landowners and, likely increase the rate of forestland conversion substantially over current rates. Increased conversion rates would be due to increased buffer requirements, the lack of exemptions for some small landowners, and the increased burden of the “no net road increase” rule. Forestland conversion to more intense land uses could cause adverse cumulative effects in some watersheds due to degraded water quality, increased sedimentation, and increased peak flows, especially at the forest/urban interface. Watersheds that are located entirely or mostly within Washington DNR-managed lands on the eastside would likely have the lowest potential for aquatic resource degradation due to conversion.

Adaptive management, while included under Alternative 4, would likely not be well supported and well funded due to the increased costs of the more restrictive protection measures. Thus, while the protection measures would be increased under Alternative 4, the ability to monitor effectiveness of those protection measures decreases.
Chapter 5

As compared to No Action Alternative 1-Scenario 1, Alternative 4 may have similar or a slightly reduced potential for adverse cumulative effects; this is due to the potential for increased forestland conversion to offset the aquatic habitat benefits of more restrictive protection measures. As compared to No Action Alternative 1-Scenario 2, Alternative 4 would have less potential for adverse cumulative effects; this is due to the large difference in protection measures between these alternatives.

5.3.4 Vegetation and Wildlife

5.3.4.1 Vegetation

The primary parameters analyzed for vegetation impacts are seral stage, riparian, and protected forest conditions. Statewide, approximately 28 percent of the forestland is either State or Federal land that is not available for timber management. Another 22 percent is Federal and tribal land that is managed for timber, but management direction on these lands generally includes longer rotation lengths and, therefore, a higher ratio of late seral stands to early seral stands than is found on State and private lands managed for timber production. This is expected to result in more than one-third of the forestlands in the State supporting late seral forests over the long term.

Late seral forest characteristics are expected to develop on an additional 3 percent of the total forestland in Washington over the long term under The alternatives considered in this analysis are expected to support late seral forests on an additional 6 percent (No Action Alternative 1-Scenario 2, Under No Action Alternative 1-Scenario 1, Alternative 2, and Alternative 3). An additional 7 percent of all forestland is expected to develop late seral characteristics over the long term. This percentage is expected to increase to 15 percent over the long term under Alternative 4, to 20 percent (Alternative 4) over the long term, while the other alternatives could support late seral forest on 9 to 10 percent of the forestland in Washington over the long term. Alternative 4 and, to a lesser extent, No Action Alternative 1-Scenario 1 and Alternative 3 would have a greater potential of encouraging conversion of forestland to other uses because of the uncertainty of future regulations on forest management and, in the case of Alternative 4, the much larger no-harvest riparian buffers. If additional land use conversions occur as compared to current conditions, this could contribute to cumulative loss of late-seral forests.

Federal and State lands not managed for timber production also provide protection for rare plants, and they are less likely to provide habitat for invasive weeds. Alternatives that have more land in no-harvest or light selective harvest riparian buffers are likely to contribute more, cumulatively, to protecting rare plants and reducing the spread of invasive plants. There are exceptions to this pattern. Some rare plants prefer disturbed areas, and these species would not benefit from the trend toward more late-seral forest. As discussed above, if No Action Alternative 1-Scenario 1, Alternative 3, and Alternative 4 result in additional land use conversions, this could contribute to cumulative loss of rare plant habitat and is likely to increase habitat for invasive plants.

The distribution of protected forests is not uniform across the State. Over 90 percent of the West Puget Sound, Southwest, and Columbia Basin Regions are State, city, and
county lands that are available for timber management, as is over 70 percent of the South Puget Sound Region. The alternatives play a larger role in providing late-seral forest, protecting rare plants, and protecting against invasive plants in these Regions. Alternative 4 is expected to contribute about six times the amount of late-seral habitat over the long term in eastern Washington and four times the amount in western Washington than is expected under No Action Alternative 1-Scenario 2, and about two to three times as much as No Action Alternative 1-Scenario 1. This prospective gain could be offset if substantially more forestland conversion occurs under Alternative 4 than under these alternatives.

5.3.4.2 Wildlife
Cumulative effects on amphibians and other wildlife species are analyzed on a landscape scale, appropriate for each species. Historic effects and land ownership and use are discussed along with the statutes, regulations, plans, and programs that may work together to cumulatively affect wildlife in subsection 5.2 (Context for Analysis). Past disturbances are also summarized by analysis region in DEIS Appendix A. Key parameters for analysis include forest conditions that constitute wildlife habitat and mandates aimed at wildlife protection and habitat improvements.

The following discussion analyzes past, present, and reasonably foreseeable actions in connection with riparian and wetland resources; land ownership/use; and existing Federal, State and local plans, policies, and programs that play a role in protection and recovery efforts for the amphibians and other listed wildlife species.

There are a number of protection measures, at all levels of government, throughout Washington to maintain and recover listed species. Protection measures under Federal, State, and local plans, policies, and programs common to all of the amphibians and other wildlife are addressed in subsection 5.2 (Context for Analysis); additional species-specific protection measures are addressed below. It is important to note that species recovery plans, HCPs, and the broad-scale Northwest Forest Plan, which span the scale of the cumulative effects analysis area, pre-date the FFR and the associated changes to the current Washington Forest Practices Rules, and would not likely change under any of the alternatives.

Species-Specific Measures
Federal

The Bald Eagle and Golden Eagle Protection Act (16 USCS 668-668c). The Bald Eagle and Golden Eagle Protection Act establishes prohibited acts and penalties to protect bald and golden eagles.

Designation of Critical Habitat for the Marbled Murrelet, Final Rule. The final designation of critical habitat for the marbled murrelet does not include all suitable habitat (U.S. Federal Register, Vol. 61, No. 102, May 24, 1996, pages 26255-26320). Emphasis was placed on those areas considered most essential to the species' conservation in terms of habitat, distribution, and ownership. A designation of critical
Chapter 5

habitat begins with identifying areas essential to the conservation of the species. In Washington, the allocation of critical habitat by ownership is in Table 5-2.

Recovery Plan for the Marbled Murrelet. The recovery plan for the marbled murrelet lists the loss of nesting habitat and poor reproductive success as the two major factors leading to the decline of the population (USFWS 1997). Factors contributing to the poor reproductive success are habitat fragmentation and edge effect, nest predation, low productivity, adult mortality, and nest mortality.

The Recovery Plan for the Northern Spotted Owl, Final Draft. The final draft of the recovery plan for the northern spotted owl divides the range of the northern spotted owl into provinces (USFWS 1992). There are three provinces in the action area, including the Western Washington Cascades Province, the Western Washington Lowlands Province, and the Olympic Peninsula Province. For identifying significant threats to the northern spotted owl, the recovery plan splits the Western Washington Cascades Province into two segments (north and south). Interstate 90 is the dividing line between the two segments.

Determination of Critical Habitat for the Northern Spotted Owl, Final Rule. Designating critical habitat for the northern spotted owl provides additional protection requirements under Section 7 of the ESA with regard to activities that are funded, authorized, or carried out by a Federal agency. The final designation of critical habitat in January 15, 1992, did not include private lands (U.S. Federal Register, Vol. 57, No. 10, January 15, 1992, pages 1796-1838).

Grizzly Bear Recovery Plan. The grizzly bear was listed as threatened on July 28, 1975 (USFWS 1993). Habitat loss and human-caused mortality (both direct and indirect) were responsible for the grizzly bears' decline in numbers. Seven recovery zones are identified for possible grizzly bear recovery.

Interagency Grizzly Bear Guidelines. The Interagency Grizzly Bear Guidelines describe five management situations relevant to management on public lands by the National Park Service, the U.S. Forest Service, and the U.S. Bureau of Land Management. Management direction and guidelines are provided for each management situation.

Table 5-2. Marbled Murrelet Designated Critical Habitat in Washington by Ownership and Land Allocation.

<table>
<thead>
<tr>
<th>Ownership Category</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Lands</td>
<td></td>
</tr>
<tr>
<td>Congressionally Withdrawn Lands</td>
<td>1,800</td>
</tr>
<tr>
<td>Late Successional Reserves</td>
<td>1,200,200</td>
</tr>
<tr>
<td>Non-Federal Lands</td>
<td></td>
</tr>
<tr>
<td>State Lands</td>
<td>426,800</td>
</tr>
<tr>
<td>Private Lands</td>
<td>2,500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,631,300</strong></td>
</tr>
</tbody>
</table>

Feasibility Study on the Reintroduction of Gray Wolves to the Olympic Peninsula. The Feasibility Study on the Reintroduction of Gray Wolves to the Olympic Peninsula concluded that the reintroduction of wolves was biologically feasible (USFWS 1998b). The analysis indicated that sufficient habitat and prey base exists to support a marginally viable wolf population over the long term. However, sportsmen have expressed concerns over a possible decline in elk and deer hunting success. Livestock and pet losses are not expected to be substantial, but would likely occur and would be a concern for the public.

Canada Lynx Federally Listed as a Threatened Species. The Canada lynx was listed under the ESA as threatened on March 24, 2000 (U.S. Federal Register, Vol. 65, No. 58, March 24, 2000, pages 16051-16086) with clarification to final rule issued in the U.S. Federal Register July 3, 2003 (U.S. Federal Register, Vol. 68, No. 128, July 3, 2003, pages 40075-40101). The range of the lynx includes portions of Washington State, and its habitat (high elevation forest) occurs primarily on Federal lands. Federal agencies are guided by the Canada Lynx Conservation Assessment and Strategy (Ruediger et al. 2000), which was produced by an interagency team of biologists. To date, the USFWS has not yet designated critical habitat for the species, and preparation of a recovery plan for the lynx is in the initial stages.

Migratory Bird Treaty Act (16 USC 703-712, Chapter 128, as amended). The Migratory Bird Treaty Act decreed that all migratory birds and their parts (including eggs, nests, feathers) were fully protected. The Act is a domestic law that affirms, or implements, the United States’ commitment to four international conventions (with Canada, Japan, Mexico, and Russia) for the protection of a shared migratory bird resource. A list of all migratory bird species subject to the regulations of the Act is listed in 50 CFR 10.13.

State

Washington Bald Eagle Protection Rules (WAC 232-12-292). The purpose of these rules is to protect bald eagle habitat. The goal is to increase and maintain the population of the bald eagle so that it no longer is classified as threatened or endangered in Washington. The rules require site management plans to be developed if land use activities would adversely impact eagle habitat. As stated in the rules, any relevant factor will be considered in developing a site management plan.

Washington Forest Practices Rules (WAC 222). The Washington Forest Practices Rules designate certain forest practices as Class IV-Special if they would occur within critical wildlife habitat (State) and critical habitat (Federal) of threatened or endangered species. Forest practices applications that are designated as Class IV-Special require an Environmental Checklist in compliance with SEPA (WAC 222-16-080), and potentially an EIS. Specific harvest and timing prescriptions apply to various wildlife species and include the northern spotted owl, marbled murrelet, bald eagle, gray wolf, grizzly bear, mountain caribou, Oregon silverspot butterfly, peregrine falcon, sandhill crane, and western pond turtle.
Chapter 5

Cumulative Effects Analysis

Many of the programs or plans listed above pre-date the FFR and the associated changes to the current Washington Forest Practices Rules and would not likely change under any of the alternatives. For Washington, approximately 40–62 percent and 34 percent of forestlandsed land in western and eastern Washington, respectively, are currently subject to the rules in western and eastern Washington, respectively (Table 3-3). An additional 7 percent of western Washington forestlands and 43 percent of eastern Washington forestlands are Federal or Tribal lands available for timber management. The remainder of the forestlands are Federal and/or State lands not primarily managed for timber production.

No Action Alternative 1-Scenario 2

If the Services do not grant the State of Washington take authorization through ESA Section 10(a)(1)(B) ITPs or take limits under ESA Section 4(d) rules, for any part of the Washington Forest Practices Rules, it is possible that the Legislature could review and rescind the 1999 Salmon Recovery Act, statutes could be modified, and current Washington Forest Practices Rules would revert back to those in effect prior to January 1, 1999. In turn, the Legislature could also reduce funding for enforcement of the Washington Forest Practices Rules and reduce or terminate funding for adaptive management.

Under the Washington Forest Practices Rules in effect on January 1, 1999, buffers would provide some level of riparian protection for approximately 618,140 acres (10 percent) of private, city, and county forestlands in western Washington (State lands in western Washington are already covered by an existing HCP). In eastern Washington, some level of riparian protection would be provided for approximately 6 percent of the private, city, county, and State forestlands, existing riparian areas in western Washington and 128,490 acres (3.8 percent) of existing riparian areas for eastern Washington, respectively (Table 3-3 and Figures 4.2-1 and 4.2-2). Fewer acres of riparian habitat would be left as no-harvest buffers, with more acres of selective harvesting occurring compared to current Washington Forest Practices Rules (No Action Alternative 1-Scenario 1). Under the Washington Forest Practices Rules in effect on January 1, 1999, forested lands subject to the rules would likely add cumulatively to past harvesting of riparian habitat on private, State, and Federal lands. Also, protections for amphibians, and riparian-associated wildlife species, and upland wildlife species, would be reduced compared to current conditions and the other alternatives, including a reduction in travel/dispersal corridors and connectivity to Federal and State protected lands. In conjunction, future ESA listings may occur that would require additional ESA compliance.

No Action Alternative 1-Scenario 1 and Alternatives 2 and 3

In contrast to No Action Alternative 1-Scenario 2, No Action Alternative 1-Scenario 1 would maintain the current Washington Forest Practices Rules. Potential cumulative impacts to amphibians, and other riparian-associated wildlife species, and upland wildlife species under No Action Alternative 1-Scenario 1 would differ from No Action Alternative 1-Scenario 2 (and the other alternatives) based on the level of continued...
adaptive management support and the relative potential for conversion of forestland to
other land uses.

Under No Action Alternative 1-Scenario 1, it is anticipated that landowner participation
in the adaptive management program would cease because ESA take authorization or
limits would not be provided. Further, the rate of forestland conversion would be
expected to rise (See subsection 4.2.3.2, Forestland Conversion and, subsection 5.3.2,
Land Ownership and Use). Future ESA listings may occur that would require additional
ESA compliance.

**Alternative 2**

THE FOLLOWING NEW TEXT REFLECTS PUBLIC COMMENTS ON THE DEIS

Alternative 2 would maintain the current Washington Forest Practices Rules and would
be expected to maintain continued stakeholder and funding support for adaptive
management. Wildlife protection under Alternative 2 would be more predictable based
on the riparian and upland strategies included in the proposed FPHCP, continued
implementation of the Washington Forest Practices Rules, continued support and
participation in program implementation, and continued public funding for adaptive
management. Therefore, adverse cumulative effects would be expected to be lower over
time under Alternative 2 as compared to No Action Alternative 1-Scenario 1, and
especially compared to No Action Alternative 1-Scenario 2.

**Current Washington Forest Practices Rules.** Under the current Washington Forest
Practices Rules, nearly twice as many acres of riparian habitat would be protected as
would be protected under No Action Alternative 1-Scenario 2. In western Washington,
approximately 21 percent of private, city, and county forestlands would fall within RMZs
(Table 3-3 and Figure 4.2-1). In eastern Washington, the percentage would be 11 percent
and would apply to all private, city, county, and State lands (Table 3-3 and Figure 4.2-2).
More acres of riparian habitat would be left as no-harvest buffers than under No Action
Alternative 1-Scenario 2 and the potential for increasing the amount of complex forest
structure along streams would be greater than under No Action Alternative 1-Scenario 2.

Under the current Washington Forest Practices Rules, with ESA incidental take coverage
from the Services, forested lands subject to the rules would not add to past harvesting of
riparian habitat on private, State, and Federal lands. The current Washington Forest
Practices Rules, along with a strong adaptive management program, add to the protection
of amphibians and riparian-associated wildlife species. This protection includes an
increase in riparian area, which would provide travel/dispersal corridors and connectivity
to Federal and State protected lands. Forestland conversion would be expected to be
somewhat less than the current rates because of the regulatory certainty that landowners
would gain under this alternative.

Alternative 2, when compared to either No Action Alternative scenario, would be
expected to improve habitat for amphibians, riparian-associated wildlife species, and
upland wildlife species because of wider no-harvests and upslope protective measures
included in the riparian and upland conservation strategies. When combined with
Federal, State, and other local wildlife planning efforts (such as the Northwest Forest Plan, recovery plans and critical habitat designations as described in this subsection under Species-Specific Measures, and approved HCPs), Alternative 2 would have positive cumulative effects on amphibians, riparian-associated wildlife species, and upland wildlife species and their habitat.

END OF NEW TEXT

Alternative 3

Adaptive management would not be as well supported in the future under Alternative 3 compared to Alternative 2. Under Alternative 3 there would likely be decreased stakeholder support for and participation in adaptive management, as well as a potential reduction in funding because of lack of take authorization for endangered species, some threatened species, and unlisted species, and because of the indefinite term of ESA assurances. It is likely that the rate of forestland conversion would be similar to current rates or higher. Therefore, the potential for adverse impacts to amphibians and other riparian-associated wildlife would be somewhat increased compared to both No Action Alternative 1 scenarios due to a less effective adaptive management program and possibly by increased conversion of forestland to non-forest uses. As compared to No Action Alternative 1-Scenario 1, the potential for adverse impacts to amphibians, and other riparian-associated wildlife species, and upland wildlife species would be expected to decrease; this potential would decrease even further as compared to No Action Alternative 1-Scenario 2. When combined with other Federal, State, and local wildlife planning efforts, Alternative 3 would provide more positive cumulative effects on amphibians, riparian-associated wildlife species, and upland wildlife species and their habitat compared to either of the No Action Alternative scenarios. However, these positive cumulative effects from Alternative 3 would be less than Alternative 2.

Existing Washington Forest Practices Rules. Under the existing Washington Forest Practices Rules, nearly twice as many acres of riparian habitat are being protected as would be protected under No Action Alternative 1-Scenario 2 with approximately 1,234,543 acres (20 percent) of protected riparian habitat in western Washington, and 247,825 acres (7 percent) of protected riparian habitat in eastern Washington (Table 3-3; Figure 4.2-1). More acres of riparian habitat would be left as no-harvest buffers, and the potential exists to increase the amount of complex forest structure along streams under No Action Alternative 1-Scenario 1 (and Alternatives 2 and 3) compared to No Action Alternative 1-Scenario 2.

Under the current Washington Forest Practices Rules, with ESA incidental take coverage from the Services, forested lands subject to the rules would not add to past harvesting of riparian habitat on private, State, and Federal lands. The current Washington Forest Practices Rules, along with a strong adaptive management program, add to the protection of amphibians and riparian-associated wildlife species. This protection includes an increase in riparian area, which would provide travel/dispersal corridors and connectivity to Federal and State protected lands.
Alternative 4

Larger no-harvest buffers under Alternative 4 would protect approximately twice the number of existing riparian acres in RMZs in western Washington and more than twice the number of acres in eastern Washington, than under the current Washington Forest Practices Rules of No Action Alternative 1-Scenario 1 (Figures 4.2-1 and 4.2-2). The RMZ acreage would be approximately four times greater than under No Action Alternative 1 Scenario 2 on both sides of the State (Figures 4.2-1 and 4.2-2). No-harvest would be allowed within the larger buffer areas. Therefore, under this alternative, there would be little to no additive negative impact to those from past timber harvests within riparian habitat on private, State, and Federal lands. Protection of habitat for amphibians, and riparian-associated wildlife species, and upland wildlife species habitat would be increased, which would also provide travel/dispersal corridors and connectivity to Federal and State protected lands. However, a more restrictive set of rules would generally not be supported by private landowners, and in turn would likely increase conversion rates and adversely affect the viability of the adaptive management programs. Increased conversions and a lack of support for adaptive management could, over time, diminish the resource benefits of a more restrictive set of rules.

As compared to No Action Alternative 1-Scenario 1, Alternative 4 may have similar or a slightly reduced potential for adverse cumulative effects to amphibians, and other riparian associated wildlife species, and upland wildlife species; this is due to the potential for increased forestland conversion in some areas to offset the aquatic habitat benefits of more restrictive protection measures. As compared to No Action Alternative 1-Scenario 2, Alternative 4 would have much less potential for adverse cumulative effects; this is due to the large difference in protection measures between these alternatives.

5.3.5 Social and Economic Environment and Archeological, Historical, and Cultural Resources

5.3.5.1 Archeological, Historical, and Cultural Resources

The archeological, historical, and cultural resources of Washington’s forestlands are under steady pressure from resource extraction, development, recreation, and other modern human activities. These resources have experienced long-term cumulative losses as a result of these types of activities. Because they are widespread and unidentified for purposes of this analysis, the effects of these activities on the archeological, historical, and cultural resources of Washington’s forestlands cannot be taken into consideration in any systematic manner. It is, however, possible to divide lands into two broad groups, private and non-private, with the non-private lands further divisible into two parts, Federal/tribal and State-managed lands. Parameters for analysis focus on protection measures for these resources.

Private forestlands are subject to the constraints of the Washington Forest Practices Rules and other regulations (RCW Chapters 27.44 and 27.52) associated with the protection of archeological, historical, and cultural resources. The effects of each alternative on these resources have been addressed in subsection 4.13 (Archeological, Historical, and Cultural Resources). In that subsection, alternatives are compared according to the levels of
Cumulative Effects

Chapter 5

protection that would be provided under each alternative and the anticipated effect of each alternative on anadromous fish.

Non-private forestlands are also managed under a set of laws, regulations, and policies pertaining to archeological, historical, and cultural resources; the effects of which are generally understood. Non-private forestlands fall into two groups: those under Federal and tribal management and those managed by the Washington DNR.

Federal and tribal lands are under the jurisdiction of the NHPA, the American Indian Religious Freedom Act, Archaeological Resource Protection Act, Native American Graves Protection and Repatriation Act, and Executive Order 13007. NHPA Section 106 requires Federal agencies to take into account the effects of Federal undertakings on cultural resources, which includes archaeological and historical properties, along with traditional cultural properties. The latter includes traditional sites, as defined herein, and areas where traditional resources are gathered. As defined in the U.S. Department of Interior regulations, “undertaking” means a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; or those requiring a Federal permit, license, or approval. The Services will comply with Section 106 of the NHPA for the action analyzed in this FEIS by making a determination whether or not the proposed Federal action is an undertaking, as previously defined, considering the nature of Federal involvement, such as the degree of Federal agency control or discretion, the type of Federal involvement or link to the action, and whether or not the action could move forward without the Federal action. The Federal review will focus on the proposed action of issuing a permit or approval for activities conducted according to requirements of the Washington Forest Practices Rules.

The American Indian Religious Freedom Act and Executive Order 13007 require agencies to take into account the effects of their actions on religious practices and sacred lands, respectively. The Native American Graves Protection and Repatriation Act protects Native American skeletal remains, associated funerary objects, sacred objects, and objects of cultural patrimony on Federal lands, while the Archaeological Resource Protection Act protects and controls access to archaeological and some historical resources. Federal and tribal agencies maintain staffs that are charged with complying with these statutes, so it is reasonable to assume that the cumulative effects of forest management on lands under Federal and tribal jurisdiction, as well as private lands with a project, activity, or program under the direct or indirect jurisdiction of a Federal agency, would not be substantial.

Archeological, historical, and cultural resources on Forest Trust lands under Washington DNR’s trustee obligations are protected under Forest Resource Plan Policy #24 and the existing State Trust Lands HCP (Washington DNR 1992a; Washington DNR 1997d). Titled “Identifying Historic Sites,” Forest Resource Plan Policy #24 declares that Washington DNR will establish a program to identify and inventory historic and archaeological sites and protect them at a level that, at a minimum, meets regulatory requirements (Washington DNR 1992a). This policy is generally interpreted to mean that
Chapter 5

Washington DNR will follow procedures equivalent to those required under Section 106 of the NHPA. The existing State Trust Lands HCP must follow RCW Chapter 27.44 and Chapter 27.53 to assure that archaeological sites and Indian graves are protected from disturbance (Washington DNR 1997d). It identifies Washington DNR’s Total Resource Application Cross-Reference System as an important tool for ensuring that department activities do not damage such sites. In addition, Washington DNR enters into Memoranda of Agreements with tribes to ensure access to and protection of traditional sites and resources. Although small numbers of sites may still be missed, and biotic resources may be affected by forest management activities, these effects are expected to be slight.

Because of these constraints, few cultural resource sites are expected to be adversely affected. Consequently, the cumulative effects of the alternatives that are considered in this FEIS would be equivalent to the direct and indirect effects, which are discussed in Chapter 4 (Environmental Consequences).

In general, the more RMZ area set-aside as no-harvest areas, the more potential protection afforded to archeological, historical, and cultural resources. The functionality of the adaptive management program is not expected to affect the protection of archeological, historical, and cultural resources to any substantial degree. However, the rate of forestland conversion could affect these resources; increases in the rate of forestland conversion could offset some of the protection afforded by larger no-harvest RMZs. Given this, No Action Alternative 1-Scenario 2 is expected to provide the least amount of protection due to the least amount of RMZ buffer area. No Action Alternative 1-Scenario 1 and Alternative 3 would provide more protection than No Action Alternative 1-Scenario 2 due to more RMZ buffer area provided under these alternatives. Alternative 2, while providing the same amount of RMZ buffer area as No Action Alternative 1-Scenario 1, offers long-term regulatory certainty, which may increase landowner willingness to voluntarily provide more protection than would be required by regulation. Alternative 4 could provide the most protection due to the largest RMZ buffer area, but some of this protection could be offset due to increased forestland conversion.

5.3.5.2 Social and Economic Environment

The following subsections discuss the potential cumulative effects of the proposed action on the economic and social environment. This discussion addresses the potential combined effects of the proposed action along with other past, present, and reasonably foreseeable future activities. Parameters for analysis include employment trends in various employment sectors.

Employment and the Economy

Total employment in Washington increased by 688,915 jobs, or 24 percent, between 1990 and 2000 (Washington Employment Security Department 2003). Covered employment projections developed in 2003 anticipate continued total employment growth with an average annual growth rate of 1.6 percent between 2002 and 2012. Covered employment in wood products manufacturing is also projected to grow, although
at a slower annual rate than total employment, increasing by 1.0 percent from 2002 to 2007 and 0.9 percent from 2007 to 2012. Logging employment is projected to remain constant from 2002 to 2007 (0.0 percent annual growth rate) and to decline between 2007 and 2012 (-0.6 percent annual growth rate). Covered employment in paper manufacturing is expected to increase slightly between 2002 and 2007 (0.2 percent annual growth rate) and remain constant from 2007 to 2012 (0.0 percent annual growth rate). Projections are not available for the commercial fishing sector (Washington Employment Security Department 2003).

Projections are also not available for the recreation sector because it is not measured as a separate industrial category, and data are not specifically gathered for this sector. Employment is, however, projected to increase in the leisure and hospitality sector, with annual increases of 1.7 percent and 1.3 percent from 2002 to 2007 and 2007 to 2012, respectively. The leisure and hospitality sector includes the arts, entertainment, and recreation sector and the accommodation and food services sector, which are often used as general measures of recreation activities (Washington Employment Security Department 2003).

Lumber and Wood Products

Annual full- and part-time employment in the lumber and wood products sector is shown for 1969 through 2000 in Figure 5-2. Lumber and wood products employment fluctuated substantially over this period, with peaks in the late 1970s prior to the economic recession of the early 1980s and an overall declining trend from 1990 onward. Harvest from all ownerships declined from 5,849 million board feet in 1990 to 4,176 million board feet in 2000, a decrease of approximately 29 percent. Harvests from National Forest System lands decreased by 736 million board feet, or 90 percent over this period. Private lands accounted for 84 percent of total harvest in 2000, with State harvest accounting for 13 percent (Washington DNR 2001). Overall, harvests declined on private and State lands in 2001 and 2002 (Washington DNR 2004b, 2004d).

As compared to No Action Alternative 1-Scenario 2, potential reductions in acres available for harvest under No Action Alternative 1-Scenario 1 (and Alternatives 2 and 3) could contribute to the downward trend in timber harvest shown in Figure 5-2. This is especially true under Alternative 4. This could, in turn, contribute to the downward trend in timber-related employment. Employment levels in both the lumber and wood products and pulp and paper sectors are, however, as noted above, expected to remain relatively stable over the next few years. These projections are based on a number of factors that affect the economic performance of the forest products sector in Washington State.
These factors include the overall health of the United States economy, demand from Asia, and competition from Canadian and European softwood lumber exporters.

Lumber prices declined nationally and in Washington State in 2002. Comparatively low prices despite a strong United States housing market and high duties on Canadian imports indicate an excess supply of softwood lumber products. The ongoing weak Asian export market coupled with continued low-priced Canadian imports suggests that lumber prices will likely remain fairly constant in the near future. Domestic and international pulp and paper markets were weak during 2002, with pulpwood and chip prices also unlikely to increase in the near future (Blatner et al. 2003). As compared to No Action Alternative 1-Scenario 2, potential reductions in timber supply under No Action Alternative 1-Scenario 1 (and Alternatives 2 and 3) are likely to contribute to these broader trends in the forest products industry, but timber supply is just one of a number of factors that affect the industry and potential future employment and income. This is especially true under Alternative 4.
Chapter 5

Recreation and Commercial Fishing

While it is not possible to quantify the cumulative effects of the proposed alternatives on salmonid populations and recreation and commercial fishing employment, it is possible to assess the potential direction of the effects and to provide a general comparison between alternatives. Potential cumulative effects to aquatic habitat and fish are discussed in subsection 5.3.3 (Aquatic Resources). The combination of programs and plans described in that subsection reflect a substantial widespread effort to put listed species on a positive trend toward recovery and to provide substantial protection for other aquatic and riparian-associated species.

The potential for adverse habitat impacts associated with No Action Alternative 1-Scenario 2, suggest that salmonid populations would likely decline over the long term under this alternative. Viewed from a cumulative perspective, this alternative is unlikely to meet the level of protection needed for the Washington Forest Practices Rules to play a role in the overall recovery process. No Action Alternative 1-Scenario 1, in contrast, provides protection that complements other activities in the region. Alternative 2 would likely result in long-term improvements as compared to both No Action Alternative 1 scenarios; substantially so compared to Scenario 2. Alternative 3 would result in a slight improvement over No Action Alternative 1-Scenario 1 and more so over No Action Alternative 1-Scenario 2.

Alternative 4 may have more certainty of achieving adequate protection to resources in the short term and would result in the highest likelihood of long-term improvements in habitat and salmonid numbers. However, over time, increased forestland conversion rates could diminish some of these resource benefits. Effects on existing salmonid populations would likely affect the availability of salmonids for recreational and commercial harvest, which would, in turn, affect recreation- and commercial fishing-related employment and income.