

# Olympic National Park

National Park Service  
U.S. Department of the Interior

Olympic National Park  
Washington



## Environmental Assessment Rehabilitate Hurricane Ridge Road Project September 2004



# ENVIRONMENTAL ASSESSMENT

## Rehabilitate Hurricane Ridge Road Project

Prepared For:  
National Park Service



Prepared By:  
engineering-environmental Management, Inc.



# Olympic National Park

## Washington

**U.S. Department of the Interior  
National Park Service**

**Environmental Assessment  
Rehabilitate Hurricane Ridge Road  
Olympic National Park  
Clallam County, Washington**

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**Summary**

At Olympic National Park, the National Park Service is considering rehabilitating and resurfacing approximately 17.6 miles of Hurricane Ridge Road from the Hurricane Ridge Visitor Center in Olympic National Park, northeasterly to the intersection with Mount Angeles Road in Port Angeles, Washington. This action is needed due to deteriorated pavement and shoulders, including pavement cracking that has resulted from landslide movement along Hurricane Ridge Road, and due to visitor confusion at the intersection of Mount Angeles Road and Hurricane Ridge Road.

The environmental assessment examines in detail two alternatives: no action and the National Park Service preferred alternative. The preferred alternative includes the resurfacing of the entire length of Hurricane Ridge Road including parking areas and turnouts; elimination of certain turnouts; improvements to the intersection of Hurricane Ridge Road and Mount Angeles Road to avoid visitor confusion; improvements to drainage and stability in landslide areas; formalizing a turning lane at the Lake Angeles / Heather Park trailhead access road; culvert cleaning, lining, or replacement, as necessary; and installing concrete headwalls and footings on culverts, as necessary.

The preferred alternative would have no impacts on geology, water resources, water quality, cultural resources, visual resources, soundscapes, wilderness values, prime and unique farmland, land use, environmental justice, and Indian trust resources.

Short-term, localized, negligible, adverse effects would occur to air quality, and socioeconomics from construction activities and construction related delays. Short-term, localized, negligible to minor, adverse impacts would occur to wildlife. Short-term, localized, minor, adverse impacts would occur to soils and vegetation. Short-term, minor to moderate adverse impacts would occur to the threatened and endangered species marbled murrelets and Northern spotted owls, and short-term moderate adverse impacts would occur to the visitor experience. There would be no long-term impacts to air quality and socioeconomics. Long-term, negligible, beneficial impacts would occur to wildlife. Long-term, minor, beneficial impacts would occur to vegetation, Park operations, and visitor experience. Long-term adverse impacts to soils would be negligible, however in landslide areas long-term, moderate beneficial impacts would occur. For threatened and endangered species, specifically the Northern spotted owl and marbled murrelet, there would be negligible adverse impacts and negligible beneficial impacts.

**Notes to Reviewers and Respondents**

If you wish to comment on the environmental assessment, you may mail comments to the name and address below or you can provide electronic comments through the National Park Service Planning and Environment Public Comment System. The public access site is: <http://parkplanning.nps.gov>. A link to the site is also available from the Olympic National Park Web site, [www.nps.gov/olym](http://www.nps.gov/olym). Our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Individual respondents may request that we withhold their home address from the record, which we will honor to the extent allowable by law. *If you want us to withhold your name and address, you must state this prominently at the beginning of your comment.* We will make all submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety.

Please address comments to:

Superintendent; Olympic National Park; Attn: Rehabilitate Hurricane Ridge Road Project; 600 East Park Avenue; Port Angeles, WA 98362-9798

E-mail: <http://parkplanning@nps.gov> or [olym\\_superintendent@nps.gov](mailto:olym_superintendent@nps.gov)

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# CONTENTS

## ACRONYMS AND ABBREVIATIONS vii

## INTRODUCTION 1

Purpose and Need for Action	1
Park Purpose, Significance, and Mission	2
Park Purpose	2
Park Significance	2
Park Mission	3
The Purpose of Park Roads	4
Functional Classifications of Park Roads	5
Federal Lands Highway Program	6
Previous Planning, Scoping, and Value Analysis	7
Previous Planning	7
Scoping	8
Issues and Impact Topics	9
Issues	9
Derivation of Impact Topics	9
Impact Topics Selected for Detailed Analysis	9
Impacts Dismissed from Detailed Analysis	11

## PREFERRED ALTERNATIVE AND OTHER ALTERNATIVES 17

Introduction	17
Alternative 1: No-Action Alternative	17
Alternative 2: Preferred Alternative	17
Roadway Improvements, Hurricane Ridge Road – All Sections	19
Roadway Rehabilitation, Section I – Hurricane Ridge Visitor Center to the Tunnels (Station 932+00 to Station 482+10, approximately Mile Post (MP) 17.7 to MP 8.9)	20
Roadway Rehabilitation, Section II – Tunnels to the Heart O’ the Hills Entrance Station (Station 482+10 to Station 284+00, approximately MP 8.9 to MP 5.2)	22
Roadway Improvements, Section III – Heart O’ the Hills Entrance Station to the Intersection with Mount Angeles Road (approximately Station 284+00 to Station 10+00, Approximately MP 5.2 to MP 0.0)	24
Roadway Improvements at Hurricane Ridge Road and Mount Angeles Road Intersection	26
Sustainability	26
Environmentally Preferred Alternative	28
Staging Area	29
Mitigation Measures	29
General Construction Schedule and Costs	29
Alternatives Considered but Dismissed	33

## CONTENTS

Comparative Summary of No-Action and Preferred Alternatives 34

Comparative Summary of Potential Environmental Impacts 35

### **AFFECTED ENVIRONMENT 37**

Location and General Description of the Park 37

Air Quality 38

Soils 38

Vegetation 39

Wildlife 40

Mammals 40

Birds 41

Reptiles and Amphibians 41

Threatened and Endangered Species and Species of Special Concern 41

Northern Spotted Owl 42

Marbled Murrelet 42

Bald Eagle 42

Visitor Experience 43

Hurricane Ridge Road 43

Park Operations 43

socioeconomic Environment 44

### **ENVIRONMENTAL CONSEQUENCES 45**

Introduction 45

Methodology 45

Context, Duration, Intensity, and Type of Impact 45

Impact Descriptions 46

Air Quality 46

Soils 47

Vegetation 48

Wildlife 48

Threatened and Endangered Species and Species of Concern 49

Visitor Experience 50

Park Operations 51

Socioeconomic Environment 52

Cumulative Effects 52

Projects that Make Up the Cumulative Impact Scenario 53

Past Actions 53

Current and Future Actions 54

Impairment of Olympic National Park Resources or Values 54

Environmental Consequences — Alternative 1: No Action 55

Air Quality	55
Soils	55
Vegetation	56
Wildlife	57
Threatened and Endangered Species and Species of Special Concern	58
Visitor Experience	58
Park Operations	59
Socioeconomic Environment	60
Environmental Consequences — Alternative 2: Preferred Alternative	61
Air Quality	61
Soils	62
Vegetation	63
Wildlife	64
Threatened and Endangered Species and Species of Special Concern	66
Visitor Experience	68
Park Operations	71
Socioeconomic Environment	72

**CONSULTATION AND COORDINATION 75**

**LIST OF PREPARERS 77**

**BIBLIOGRAPHY 79**

**APPENDIX A: U.S. FISH AND WILDLIFE SERVICE SPECIES LIST**

**APPENDIX B: BIOLOGICAL ASSESSMENT**

**APPENDIX C: NATIONAL PARK SERVICE PRESS RELEASE**

**LIST OF FIGURES**

Figure 1. Hurricane Ridge Road Project Site	1
Figure 2. Typical Road Section	12
Figure 3. Typical Road Shoulder Along Hurricane Ridge Road Below the Entrance Station	19
Figure 4. Road and Ditch Configuration	20
Figure 5. Informal Earthen Turning Lane at Heart O' the Hills Entrance Station	26
Figure 6. Hurricane Ridge Road / Mount Angeles Road Intersection Proposed Reconfiguration	27
Figure 7. Olympic National Park Vicinity Map	37
Figure 8. Contrast in Forest Conditions Within and Adjacent to the Olympic National Park Boundary	40

## **LIST OF TABLES**

Table 1. Approximate Acreage of Disturbed and Reclaimed Areas Under Preferred Alternative	18
Table 2. Culvert Treatment Recommendations – Section I	21
Table 3. Culvert Treatment Recommendations – Section II	22
Table 4. Additional Subexcavation Areas of Hurricane Ridge Road – Section II	24
Table 5. Culvert Treatment Recommendations – Section III	24
Table 6. Mitigation Measures	30
Table 7. Comparative Summary of No-Action and Preferred Alternatives	34
Table 8. Comparative Summary of Potential Environmental Impacts	35
Table 9. Project Road Closures	70



## **ACRONYMS AND ABBREVIATIONS**

ASL	Above Sea Level
CFR	Code of Federal Regulations
Contractor	Construction contractor for the Hurricane Ridge Road rehabilitation project
MP	Mile Post
NEPA	National Environmental Policy Act of 1969, as amended
NPS	National Park Service
NRHP	National Register of Historic Places
USC	United States Code

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## INTRODUCTION

### PURPOSE AND NEED FOR ACTION

The National Park Service (NPS) is considering rehabilitating and resurfacing approximately 17.6 miles of Hurricane Ridge Road from the Hurricane Ridge Visitor Center in Olympic National Park, northeasterly to the intersection with Mount Angeles Road in Port Angeles, Washington (figure 1).

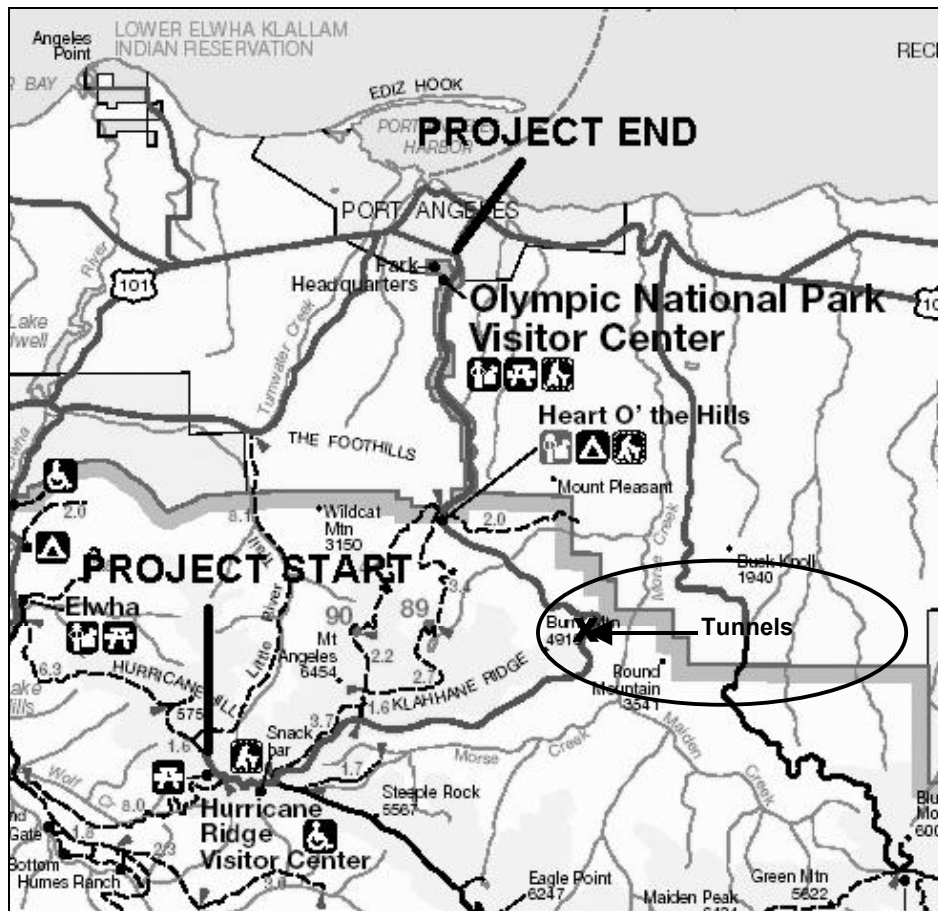


FIGURE 1. HURRICANE RIDGE ROAD PROJECT SITE

This action is needed because the road is nearing the end of its serviceable life due to deteriorated pavement and shoulders, potential structural problems associated with landslide movement, parking and pedestrian access issues at some turnouts and parking areas, and because of visitor confusion at the intersection of Mount Angeles Road and Hurricane Ridge Road.

An environmental assessment analyzes the preferred alternative and other alternatives and their impacts on the environment. This environmental assessment has been prepared in

accordance with the National Environmental Policy Act of 1969, as amended (NEPA), and regulations of the Council on Environmental Quality (40 *Code of Federal Regulations* (CFR) 1508.9); National Park Service Director's Order – 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making*; and the National Historic Preservation Act of 1966 (as amended).

## **PARK PURPOSE, SIGNIFICANCE, AND MISSION**

An essential part of the planning process is to understand the purpose, significance, and mission of the park for which this environmental assessment is being prepared.

### **Park Purpose**

Park purpose statements are based on national park legislation, legislative history, and National Park Service policies. The statements reaffirm the reasons for which the national park was set aside as a unit of the national park system, and provide the foundation for national park management and use.

The purpose of Olympic National Park is listed in the 1996 *Statement for Management* as follows:

“The purpose of Olympic National Park is to preserve for the benefit, use, and enjoyment of the people, the finest sample of primeval forests of Sitka spruce, western hemlock, Douglas-fir, and western red cedar in the entire United States; to provide suitable winter range and permanent protection for the herds of native Roosevelt elk and other wildlife indigenous to the area; to conserve and render available to the people, for recreational use, this outstanding mountainous country, containing numerous glaciers and perpetual snow fields, and a portion of the surrounding verdant forests together with a narrow strip along the beautiful Washington coast.”

### **Park Significance**

Park significance statements capture the essence of the national park's importance to the natural and cultural heritage of the United States of America. Significance statements do not inventory park resources; rather, they describe the park's distinctiveness and help place the park within the regional, national, and international context. Defining park significance helps park managers make decisions that preserve the resources and values necessary to accomplish the purpose of the national park.

Olympic National Park is significant because:

- Olympic National Park protects several distinctly different and relatively pristine ecosystems, ranging from more than 60 miles of wild Pacific coast and islands through densely forested lowlands to the glacier-crowned Olympic Mountains.
- The ecosystems protected within Olympic National Park contain a unique array of habitats and life forms resulting from thousands of years of geographic isolation, along with extreme gradients of elevation, temperature, and precipitation. At least 16 kinds of animals and eight kinds of plants on the Olympic Peninsula exist nowhere else in the world.
- Olympic National Park protects the primeval character of one of the largest wilderness areas in the contiguous United States.
- Olympic National Park protects some of the finest remaining stands of old-growth temperate rainforest in the United States. These forests of ancient and immense trees provide habitat for dozens of smaller plants and animals, including important habitat for a number of threatened species.
- Olympic National Park protects more than 3,000 miles of rivers and streams within 11 watersheds and provides one of the largest remaining tracts of pristine spawning and rearing habitat in the lower 48 states. Nine species of salmon, trout, and char and many other native fish inhabit these waters.
- The Olympic rocky intertidal community is considered one of the most complex and diverse shoreline communities in the United States. Olympic National Park and neighboring Olympic Coast National Marine Sanctuary protect almost 5,000-square miles of intertidal, island, and ocean habitats.
- Olympic National Park protects the largest population of Roosevelt elk in its natural environment in the world. Decades of protection from human harvest and habitat manipulation have sustained not only high densities of elk, but also preserved the natural composition, social structure, and dynamics of this unique coastal form of elk found nowhere else.

## **Park Mission**

Park purpose describes the specific reason the park was established. Park significance is the distinctive features that make the park different from any other. Together, purpose and significance lead to a concise statement—the mission of the park. Park mission statements describe conditions that exist when the legislative intent for the park is being met.

The mission of Olympic National Park is to preserve and protect, unimpaired, the Park's diverse natural and cultural resources and provide for the enjoyment, education, and inspiration of present and future generations.

To fulfill this mission, Park staff must understand and protect the natural processes, habitats, and life forms found within the Park—from the glacier-capped Olympic Mountains, to the ancient forests, to the beaches and headlands of the wilderness coast. In addition, Park staff must protect the Park's cultural resources, which document 10,000 years of human occupation and reveal the region's history of discovery, exploration, homesteading, and community development, as well as the history of the Park itself.

While protecting these resources for future generations, the Park provides today's visitors with access, facilities, information, and education needed to fully experience, enjoy, and learn from the Park.

### THE PURPOSE OF PARK ROADS

An objective of this action is to maintain the purpose of a national park road as summarized in the "Park Road Design" memorandum dated February 20, 1986, from William Mott, then director of the National Park Service.

The purpose of park roads remains in sharp contrast to that of the federal and state highway systems. Park roads are not intended to provide fast and convenient transportation; they are intended to enhance visitor experience while providing safe and efficient accommodation of park visitors and to serve essential management access needs.

As stated in the 1984 *NPS Park Roads Standards*, roads in national parks serve a distinctly different purpose from most other road and highway systems. Among all public resources, those of the national park system are distinguished by their unique natural, cultural, scenic, and recreational qualities. Those values are dedicated and set aside by public law to be preserved for the benefit and enjoyment of people in a manner that will leave them unimpaired for future generations.

Pragmatically, the protection, use, and enjoyment of park resources in a world of modern technology has necessitated the development of a system of public park roads. In most parks today, the basic means of providing for visitor and park administrative access is the park road system. For visitors, a road is both a means and an end—it enables one visitor to reach a desired goal; for another, it is the goal. Park roads also provide essential management access.

Safeguarding visitor safety, providing quality recreation opportunities, and conducting sound planning and resource protection and management are paramount National Park Service goals. It is with these principles that National Park Service road standards have been developed to provide definitive guidelines for those involved in making decisions affecting traffic and park visitor circulation.

The fundamental purpose of national parks is to balance resource values and preservation with visitor use and experience, which dictates that the quality of the park experience must be a primary consideration. Full use and enjoyment of a national park visit depends on its being a safe and leisurely experience. The distinctive character of park roads plays a basic role in setting this essential unhurried pace.

Park roads, which are constructed only where necessary, are designed with extreme care and sensitivity to provide access for the protection, use, and enjoyment of the resources that constitute the national park system. They generally are planned for leisurely sightseeing. Park roads are often narrow, winding, and hilly, but therein may lie their appeal. Sound planning and resource preservation practices dictate that park roads lie lightly on the land. Where terrain and safety conditions permit, and where such uses are advocated by the park's approved master plan or general management plan, opportunities may be provided for random stopping to enable visitors to experience park resources more completely.

Park roads cannot accommodate all types of vehicles, nor can they accommodate all levels of speed. The use of park roads by recreational vehicles, bicycles, tour buses, minivans, and smaller, less powerful automobiles has increased substantially in the past few decades. The greater dimensions and slower operation of recreational vehicles and tour buses and the fact that drivers of these vehicles are sometimes inexperienced in management of larger vehicles can result in serious safety concerns.

Large numbers of long, wide vehicles operating on relatively narrow roads can represent a significant element in the traffic service and road design requirements for park roads. Increased numbers of repeated heavy-axle loadings can be detrimental to the service life of road pavements that were not originally designed for continuous use by such large, heavy vehicles. Although new kinds of vehicles are continually being developed, the National Park Service is not obliged to construct roads or to manage traffic so that all forms of modern transportation technology can be accommodated. Where such vehicles are permitted, the design of park roads should reflect, to the extent possible, the fact that operational and safety characteristics of recreational vehicles differ from those of automobiles.

When the condition of park roads is examined, a determination of the sizes and types of vehicles that can be safely accommodated is calculated, and vehicle sizes and limits are sometimes established. In some instances it is preferable to prohibit vehicles that exceed these limits on a particular road or road segment rather than to reconstruct roads to higher standards. Such reconstruction could result in unacceptable consequences to park resources. Where vehicle restrictions are encouraged, appropriate alternatives include restricting vehicle traffic beyond specific points, providing turnarounds, turnouts, and parking areas for larger vehicles, reducing speed limits, or providing alternate means of transportation.

## **Functional Classifications of Park Roads**

A park road system includes the roads within and the roads providing access to a national park or other unit of the national park system that is administered by the National Park Service, separately or in cooperation with other agencies. For purposes of functional classification, the routes that constitute a park road system are broadly grouped on the basis of use into three principal categories: (1) public use park roads, (2) administrative park roads, and (3) urban parkways and city streets. Each category has further subdivisions or classes based on the assignment of a functional classification to a park road. Road classification is not based on traffic volumes or design speed, but on the intended use or function of that particular road or route.

## Public Use Park Roads

Public use park roads are all roads that are intended principally for the use of visitors for access into and within a park. This includes all roads that provide vehicle passage for visitors or access to such representative park areas as points of scenic or historic interest, campgrounds, picnic areas, trailheads, and similar features. This category also includes county, state, and federal numbered highways that are maintained by the National Park Service.

## Administrative Park Roads

Administrative park roads are all public and nonpublic roads intended to be used principally for the administrative purposes necessary to carry out the management objectives for a particular area. This category includes roads that serve employee residential areas, maintenance areas, and other administrative developments, as well as patrol roads, truck trails, and similar administrative roads.

## Urban Parkways and City Streets

The classification of urban parkways and city streets applies to facilities that serve high volumes of park-related and nonpark-related traffic. These facilities are restricted, limited-access facilities in an urban area.

Functionally, because it provides access for visitor use and administrative needs, Hurricane Ridge Road in Olympic National Park is classified as a public use and administrative park road.

## **FEDERAL LANDS HIGHWAY PROGRAM**

The Federal Lands Highway Program was created with the 1982 Surface Transportation Assistance Act. The primary purpose of the Federal Lands Highway Program is to provide funding for a coordinated program of public roads that serve the transportation needs of federal lands that are not a state or local government responsibility. Federal Lands Highway Program roads serve recreational travel and tourism, protect and enhance natural resources, provide sustained economic development in rural areas, and provide needed transportation access for American Indians.

The Federal Highway Administration, through interagency agreements with federal land managing agencies, including the National Park Service, administers a coordinated federal lands program consisting of forest highways, public lands highways, park roads and parkways, refuge roads, and reservation roads. This program provides funding for more than 90,000 miles of federally owned and public authority-owned roads, which serve federal lands. There are approximately 8,000 miles of park roads and parkways under jurisdiction of the



National Park Service. Program funds may only be used on public roads under the jurisdiction of the National Park Service. General program responsibilities include:

- The National Park Service develops a priority program of projects within available funding.
- The program is jointly administered by the National Park Service and the Federal Highway Administration, in accordance with interagency agreements.
- The Federal Highway Administration undertakes a majority of the design and construction and the National Park Service is responsible for planning, environment, and protection of park values.

This project, Rehabilitate Hurricane Ridge Road, would be funded through the Federal Lands Highway Program. The Federal Highway Administration, Western Federal Lands Highway Division, is a cooperating agency on the design of the project and the preparation of the environmental assessment.

## **PREVIOUS PLANNING, SCOPING, AND VALUE ANALYSIS**

### **Previous Planning**

In June 2003, the culverts along Hurricane Ridge Road were inspected to determine the general condition of the pipes as well as their ability to function properly. The pipes along the road, both concrete and corrugated metal, were considered to be in generally good condition given their age (installed in the 1950s) and were functioning properly (WFHLD, FHWA 2003). Recommendations from this culvert inventory included the lining in-place of severely rusted corrugated metal pipes. This was suggested because lining in-place has much less environmental impact and virtually no disruption during installation when compared to replacing the pipes. Additionally, it was recommended that placing concrete headwalls and footings on pipe inlets and outlets, respectively, would eliminate the potential for snagging and damaging the ends of the corrugated metal pipes during debris removal activities as part of ongoing maintenance. These pipes continually become filled with debris from slope erosion and snow slides, and during maintenance procedures have been damaged by backhoes (WFHLD, FHWA 2003).

A road inventory report was completed in October of 1999 for the Heart O' the Hills Road and Hurricane Ridge Road. The inventory described the road condition in approximately 1 mile segments, rating particular features on a scale from 1 to 100 (with higher numbers indicating better features). Severe alligator cracking, transverse cracking, and longitudinal cracking were noted for both roads. The roads were rated as poor to good in relation to pavement condition, including roughness, with stretches of Hurricane Ridge Road receiving the lowest ratings (i.e., they are in the worst condition when compared to the other stretches). Overall, shoulder and drainage conditions were rated as "good."

## Scoping

Scoping is an effort to involve agencies and the general public in determining issues to be addressed in this environmental assessment. Scoping is used to determine important issues to be given detailed analysis in the environmental assessment and eliminate issues not requiring detailed analysis; allocate assignments among the interdisciplinary team members and/or other participating agencies; identify related projects and associated documents; identify permits, surveys, consultations, etc. required by other agencies; and create a schedule that allows adequate time to prepare and distribute the environmental assessment for public review and comment before a final decision is made. Scoping includes any interested agency, or any agency with jurisdiction by law or expertise (including, as appropriate, the state historic preservation office and American Indian tribes) to obtain early input.

To begin the planning process, staff of Olympic National Park and resource professionals of the National Park Service – Denver Service Center, conducted internal scoping. This interdisciplinary process defined the purpose and need, identified potential actions to address the need, determined the likely issues and impact topics, and identified the relationship of the proposed action to other planning efforts at Olympic National Park.

A press release initiating public scoping and describing the proposed action was issued on September 24, 2003 (appendix C). The press release was sent to approximately 200 media outlets, interested groups, public officials, agencies, and individuals in the Puget Sound and Olympic Peninsula area. In addition, approximately 70 letters were sent to individuals, organizations and agencies, plus more than 300 letters were sent to individuals who live near the project area requesting comments related to the Hurricane Ridge Road project. Comments were solicited during a public scoping period that ended October 24, 2003. Eleven responses to this initial scoping were received. Comments received were generally in support of the rehabilitation project, although two individuals indicated that the problems with the intersection of Hurricane Ridge Road and Mount Angeles Road could be solved by simply providing better signage. There were some concerns expressed about the nature of the improvements, including the location of turnouts and guardrails along the route; resurfacing the road versus chip sealing; and establishing a bike lane in both directions to provide non-motorized users a safe, memorable, and quality experience. The Olympic Peninsula Audubon Society noted that traffic delays and the operation of construction equipment would create more exhaust fumes, and recommended controlling these emissions.

The public and American Indian groups traditionally associated with the lands of Olympic National Park will also have an opportunity to review and comment on this environmental assessment.

## ISSUES AND IMPACT TOPICS

### Issues

The major issues are the conformance of this proposal with the Olympic National Park *Statement for Management*; natural resource issues including potential impacts to biotic communities (wildlife and vegetation), threatened and endangered species, and species and habitats of special concern; soils; wetlands and floodplains; water quality; air quality; ecologically critical areas, wild and scenic rivers, and other unique natural areas; cultural resources; Indian trust resources; soundscapes; visual resources; prime and unique farmland; socioeconomic environment and land use; wilderness; visitor experience; environmental justice; and park operations.

### Derivation of Impact Topics

Specific impact topics were developed for discussion focus and to allow comparison of the environmental consequences of each alternative. These impact topics were identified based on federal laws, regulations, and executive orders; *NPS 2001 Management Policies*; and National Park Service knowledge of limited or easily impacted resources. In addition, impact topics were identified and documented in an environmental screening form, dated February 4, 2003, which is a requirement of Director's Order 12. A brief rationale for the selection of each impact topic is given below, as well as the rationale for dismissing specific topics from further consideration.

### Impact Topics Selected for Detailed Analysis

#### Air Quality

The 1963 Clean Air Act, as amended (42 *United States Code* (USC) 7401 et seq.), requires land managers to protect air quality. Section 118 of the Clean Air Act requires parks to meet all federal, state, and local pollution standards. *NPS 2001 Management Policies* address the need to analyze potential impacts to air quality during park planning. Under the Clean Air Act, Olympic National Park is designated as a Class I area, which implies the strictest requirements for protection of air quality (NPS 1990).

Under the preferred alternative, air quality along the Hurricane Ridge Road corridor would be affected by dust and vehicle emissions during construction activities. Therefore, air quality will be an impact topic addressed in this environmental assessment.

## Biotic Communities (Soil, Vegetation, Wildlife, and Threatened and Endangered Species and Species of Special Concern)

NEPA is the national charter for the protection of the environment; NEPA calls for an examination of impacts on all components of affected ecosystems. National Park Service policy is to protect the natural abundance and diversity of all the Park's naturally occurring communities. The *2001 NPS Management Policies*, NPS-77 (Natural Resources Management), and the 1996 Olympic National Park *Statement for Management*, among other National Park Service and Park policies, provides general direction for the protection of the natural abundance and diversity of all the Park's naturally occurring communities. This impact topic addresses all potentially impacted communities, including soil, vegetation, wildlife, and threatened and endangered species, and species of special concern.

**Soil.** The proposed action would involve manipulation of soil through roadway improvements and landslide mitigation; therefore, soil will be an impact topic addressed in this environmental assessment.

**Vegetation.** The proposed action has the potential to affect roadside vegetation and vegetation in areas of landslide movement; therefore, vegetation will be an impact topic addressed in this environmental assessment.

**Wildlife.** The proposed action has the potential to affect wildlife during construction activities; therefore, wildlife will be an impact topic addressed in this environmental assessment.

**Threatened and Endangered Species and Species of Special Concern.** The Endangered Species Act (1973), as amended, requires an examination of impacts on all federally listed threatened or endangered species. National Park Service policy also requires examination of the impacts on federal candidate species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species. By correspondence dated December 24, 2002, the U.S. Fish and Wildlife Service provided a list of threatened, endangered, and special-status species (appendix A). Such species, specifically the Northern spotted owl (*Strix occidentalis*), marbled murrelet (*Brachyramphus marmoratus*), and bald eagle (*Haliaeetus leucocephalus*), could be affected by the proposed action; therefore, threatened, endangered, and special-status species will be an impact topic addressed in this environmental assessment.

## Visitor Experience

Providing for visitor enjoyment is one of the elemental purposes of the National Park Service according to the Organic Act. The 1996 Olympic National Park *Statement for Management* and other Park management documents reaffirmed the importance and significance of recreational values and established provisions for recreational uses by providing quality facilities for a more meaningful visitor experience. Both the no-action and preferred alternatives have the potential to variously affect the visitor experience at Olympic National Park. Therefore, visitor experience will be addressed as an impact topic in this environmental assessment.

## Park Operations

Park operations associated with maintaining Hurricane Ridge Road could be affected by either of the alternatives described in this document. Inevitably, additional road deterioration will create additional maintenance time and cost with associated traffic delays. Therefore, Park operations will be addressed as an impact topic in this environmental assessment.

## Socioeconomic Environment

The preferred alternative has the potential to affect local businesses outside the park through construction materials purchased and construction worker spending and concessioner business at the Hurricane Ridge Visitor Center through construction related delays that could cause visitors to avoid traveling the road. Therefore, socioeconomics will be an impact topic addressed in this environmental assessment.

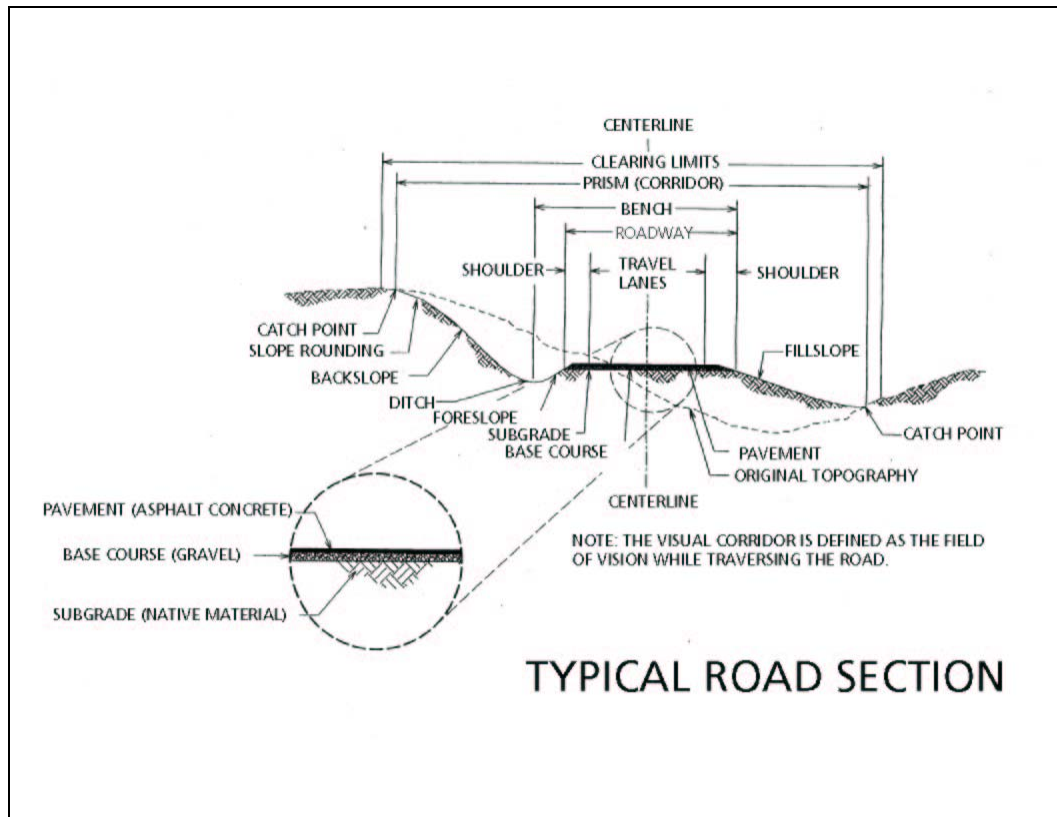
## Impacts Dismissed from Detailed Analysis

### Geology and Geologic Hazards

There would be no impacts to geologic features. Although ground-disturbing activities are anticipated under the preferred alternative, they are within the previously disturbed Hurricane Ridge Road prism (see figure 2 for a depiction of the road prism), and would only affect previously disturbed geology or geologic hazards (e.g., landslides). Therefore, geology and geologic hazards have been dismissed as an impact topic in this environmental assessment.

### Wetlands and Floodplains

Executive Order 11988 (*Floodplain Management*) requires an examination of impacts to floodplains and potential risk involved in placing facilities within floodplains. *NPS 2001 Management Policies*, Director's Order – 2: *Planning Guidelines*, and Director's Order – 12: *Conservation Planning, Environmental Impact Analysis, and Decision-making* provide guidelines for proposed actions in floodplains. Executive Order 11990 (*Protection of Wetlands*) requires an examination of impacts to wetlands. There are no jurisdictional or National Park Service-defined wetlands within the project area, nor would the project activities occur in any floodplains. Therefore, wetlands and floodplains have been dismissed as an impact topic in this environmental assessment.



**FIGURE 2. TYPICAL ROAD SECTION**

Designated Critical Habitat, Ecologically Critical Areas, Wild and Scenic Rivers, Other Unique Natural Areas

No areas within the project corridor are designated as critical habitat or ecologically critical, nor are there any existing or potential wild and scenic rivers. Olympic National Park is an important natural area, but the proposed action would not threaten the associated qualities and resources that make the Park unique. Therefore, designated critical habitat, ecologically critical areas, wild and scenic rivers, and other unique natural areas have been dismissed as impact topics in this environmental assessment.

## Water Quality

The 1972 Federal Water Pollution Control Act, as amended by the Clean Water Act of 1977, is a national policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters; to enhance the quality of water resources; and to prevent, control, and abate water pollution. *NPS 2001 Management Policies* provide direction for the preservation, use, and quality of water in national park units. Although the potential for sedimentation exists during the construction activities associated with the proposed action, sediment

controls would be implemented so that anticipated impacts to water quality would be minimized. The proposed action would not impact any navigable streams or fisheries. Therefore, water quality has been dismissed as an impact topic in this environmental assessment.

## Wilderness Values

The Wilderness Act of 1964 “established a National Wilderness Preservation System to be composed of federally owned areas designated by Congress as ‘wilderness areas,’ and these shall be administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness.”

It is the policy of the National Park Service (*NPS 2001 Management Policies*, Chapter 6: “Wilderness Preservation and Management”) to “take no action that would diminish the wilderness suitability of an area possessing wilderness characteristics until the legislative process of wilderness designation has been completed. Until that time, management decisions pertaining to lands qualifying as wilderness will be made in expectation of eventual wilderness designation.”

Among other mandates are the protection of wilderness areas and the preservation of their wilderness character. Wilderness characteristics are defined in the Wilderness Act as:

- The earth and its community of life are untrammeled by humans, where humans are visitors and do not remain.
- The area is undeveloped and retains its primeval character and influence without permanent improvements or human habitation.
- The area generally appears to have been affected primarily by the forces of nature with the imprint of humans’ work substantially unnoticeable.
- The area is protected and managed so as to preserve its natural conditions.
- The area offers outstanding opportunities for solitude or a primitive and unconfined type of recreation.

Olympic National Park contains over 900,000 acres of wilderness. Hurricane Ridge Road is a narrow corridor of non-wilderness land surrounded by designated wilderness; wilderness lands are located as close as 200 feet from the road centerline. These federally designated wilderness lands would not be disturbed during construction activities.

Given favorable wind conditions, construction activities at the project site would generate noise that could be marginally perceptible in the seldom used peripheral area of wilderness, 200 feet from the road centerline. Construction activity could also be seen from some wilderness areas. However, wilderness users are accustomed to the road and its attendant activity, and construction with associated equipment would not contribute measurably to noise or visual impacts on wilderness values. Visitors have the expectation of noise in the area from the existing road corridor. Construction activity and any generated noise associated with the action alternative would last only a short time in any one area.

There would be localized, negligible, adverse, short-term consequences to federally designated wilderness lands and wilderness values (solitude, natural quiet, and an unspoiled day and night sky dome) from construction activities and associated noise should the action alternative be selected. The road work itself is outside the wilderness boundaries and activities within the road corridor are, therefore, not subject to Wilderness Act requirements. Therefore, wilderness values have been dismissed as an impact topic in this environmental assessment.

## Cultural Resources

Cultural resources include archeological resources, ethnographic resources, historic structures, and cultural landscapes. Cultural resources are found throughout Olympic National Park, from its mountain peaks and alpine meadows, down to its river valleys and coastal shoreline. Numerous legislative acts, regulations, and National Park Service policies provide direction for the protection, preservation, and management of cultural resources on public lands. Further, these laws and policies establish what must be considered in general management planning and how cultural resources must be managed in future undertakings resulting from the approved plan, regardless of the final alternative chosen. Applicable laws and regulations include the National Park Service Organic Act (1916), the Antiquities Act of 1906, the National Historic Preservation Act of 1966 (1992, as amended), NEPA, the National Parks and Recreation Act of 1978, the Archeological Resources Protection Act of 1979, the Native American Graves Protection and Repatriation Act of 1990, and the Curation of Federally Owned and Administered Archeological Collections (1991). Applicable agency policies relevant to cultural resources include chapter 5 of *NPS 2001 Management Policies*, and Director's Order – 28: *Cultural Resource Management*, as well as other related policy directives such as the National Park Service *Museum Handbook*, National Park Service *Manual for Museums*, and *Interpretation and Visitor Services Guidelines* (NPS-26).

Prior to work and repairs in the Hurricane Ridge Road corridor during the 1980s, Olympic National Park staff conducted surveys for archeological resources, historic resources, ethnographic resources, and cultural landscapes. No resources eligible for listing in the National Register of Historic Places (NRHP) were identified; the Washington State Historic Preservation Office concurred with the finding of no effect of the National Park Service. All construction activities proposed under the preferred alternative would occur within the existing road prism that was previously cleared for impacts to cultural resources.

The 1995 Programmatic Agreement among the National Park Service, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers states that “repaving of existing roads or existing parking areas within previously disturbed areas may be reviewed internally by the National Park Service for section 106 purposes, without further review by the Advisory Council or the State Historic Preservation Offices.” Because impacts from the proposed project would occur within existing disturbed areas, fill slopes, and landslide areas, Olympic National Park has determined that there would be no effect to cultural resources and that no further consultation is necessary. Because all work would occur within the previously reviewed road corridor and the National Park Service has determined there would be no impacts to cultural resources, cultural resources have been dismissed as an impact topic in this environmental assessment.



Should previously unknown cultural resources be encountered during construction activities, work would be halted in the discovery area and the Park would consult according to 36 CFR 800.13 and, as appropriate, provisions of the Native American Graves Protection and Repatriation Act of 1990.

#### Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes. The lands comprising the Park are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Therefore, Indian trust resources have been dismissed as an impact topic in this environmental assessment.

#### Soundscapes

In accordance with *NPS 2001 Management Policies* and Director's Order – 47: *Sound Preservation and Noise Management*, an important part of the National Park Service mission is preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequency, magnitude, and duration of human-caused sound considered acceptable varies among National Park Service units, as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas. Noise associated with road improvements would be short term and localized, and would not result in a measurable increase in traffic noise. Consideration of noise impacts on threatened, endangered, and special-concern species, as well as visitor experience, are addressed under the respective impact topics. Therefore, soundscapes have been dismissed as a separate impact topic in this environmental assessment.

#### Prime and Unique Farmland

In 1980, the Council on Environmental Quality directed federal agencies to assess the effects of their actions on farmland soils classified as prime or unique by the United States Department of Agriculture, Natural Resources Conservation Service. Prime or unique farmland is defined as soil, which particularly produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. There are no prime or unique farmlands associated with the project area. Therefore, prime and unique farmland has been dismissed as an impact topic in this environmental assessment.

## Visual Resources

Visual resources would be affected by the proposed project; however, the effects would be short term, localized, and negligible. Visual impacts would occur during construction and to areas close to the road construction. The scenic viewscapes for which Olympic National Park is renowned would not be affected by the proposed project. Therefore, visual resources have been dismissed as an impact topic in this environmental assessment.

## Environmental Justice

Executive Order 12898 (*General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), requires all agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations or communities. No alternative under consideration would have health or environmental effects on minorities or low-income populations or communities as defined in the Environmental Protection Agency's *Draft Environmental Justice Guidance* (July 1996). Therefore, environmental justice has been dismissed as an impact topic in this environmental assessment.

## **PREFERRED ALTERNATIVE AND OTHER ALTERNATIVES**

### **INTRODUCTION**

The alternatives section describes two management alternatives for Hurricane Ridge Road at Olympic National Park. Alternatives for this project were developed to resolve visitor experience and Park operations issues.

The no-action alternative describes the action of continuing the present management operation and condition, it does not imply or direct discontinuing the present action or removing existing uses, developments, or facilities. The no-action alternative provides a basis for comparing the management direction and environmental consequences of the proposed action alternative. Should the no-action alternative be selected, the National Park Service would respond to future needs and conditions associated with Hurricane Ridge Road at Olympic National Park without major actions or changes in course.

The preferred alternative presents the National Park Service proposed action and defines the rationale for the action in terms of resource protection and management, visitor and operational use, costs, and other applicable factors.

Additional alternatives considered and dismissed from detailed analysis are also discussed in this section. A summary table comparing the environmental consequences of each alternative is presented at the end of the alternatives section.

### **ALTERNATIVE 1: NO-ACTION ALTERNATIVE**

The no-action alternative would be the continuation of existing conditions for Hurricane Ridge Road. Should the no-action alternative be selected, the National Park Service would respond to future needs and conditions associated with Hurricane Ridge Road in Olympic National Park without major actions or changes in the present course. This would include routine road work and maintenance such as culvert and ditch maintenance, patching, striping, and shoulder work (e.g., vegetation and rock clearing). In the event of accelerated or continuing landslide movement, the Park would respond to the need for repairs and/or temporary closure, as necessary.

### **ALTERNATIVE 2: PREFERRED ALTERNATIVE**

Alternative 2 is the National Park Service preferred alternative. The preferred alternative presents the National Park Service's proposed action and defines the rationale for the action in terms of resource protection and management, visitor and operational use, and costs. The preferred alternative meets the Olympic National Park planning objective of providing an adequate transportation route to Hurricane Ridge and opportunities for visitors to stop and

experience the Park along the route. The preferred alternative would be designed for a 20-year service life, meeting current and anticipated future needs during that period.

Under the preferred alternative, improvements to Hurricane Ridge Road would occur during the 2005 and 2006 construction seasons. For the purposes of this environmental assessment, the Hurricane Ridge Road corridor has been divided into three sections as follows:

- Section I – Hurricane Ridge Visitor Center to the tunnels (Station 932+00 to Station 500+00; Elevation: approximately 5,200 feet above sea level [ASL] to 2,600 feet ASL).
- Section II – tunnels to the Heart O’ the Hills entrance station (Station 500+00 to approximately Station 286+00; Elevation: approximately 2,600 feet ASL to 1,750 feet ASL).
- Section III – Heart O’ the Hills entrance station to the intersection with Mount Angeles Road (Station 286+00 to 10+00; Elevation: approximately 1,750 feet ASL to sea level).

These sections comprise the entire length of Hurricane Ridge Road and total approximately 17.6 miles (see figure 1). It is anticipated that road work in Sections I and II would begin in March of 2005 and would be completed by September 2005. Road work in Section III would begin in March of 2006 and end by September 2006.

All activities under the proposed project are expected to remain within the existing road prism, as depicted in figure 2. It is anticipated that the construction zone would encompass 5 feet of the fillslopes and foreslopes on each side of the road. A summary of the anticipated disturbances associated with each element of the preferred alternative is provided (table 1). It also notes whether or not the disturbed area, or a portion thereof, would be reclaimed. A permit under the National Pollutant Discharge Elimination System would be required because the disturbed area acreage exceeds one acre.

**TABLE 1. APPROXIMATE ACREAGE OF DISTURBED AND RECLAIMED AREAS UNDER PREFERRED ALTERNATIVE**

<b>Project Element</b>	<b>Area Disturbed (acres)</b>	<b>Area Reclaimed (acres)</b>
Lane Widening, All Segments	21.5	21.5
Reduce Turnout Size (four)	0	~ 0.3
Pave Existing Gravel Turnouts (two)	< 0.1	0
Improvements at Parking Areas, Stations 476+78.48 to 479+95.04, and Employee Parking Area	0.2	0.1
Landslide Stabilization, Station 208+16	< 0.2	0.2
Hurricane Ridge Road / Mount Angeles Road Intersection Improvements	0.1	0
Landslide Stabilization / Drainage Work, Station 355+00	0.5	0.5
Pave Lake Angeles / Heather Park Trailhead Turnoff	< 0.1	0
<b>TOTAL</b>	<b>22.6</b>	<b>22.6</b>

## Roadway Improvements, Hurricane Ridge Road – All Sections

Culverts along Hurricane Ridge Road have been in place for up to 50 years and many are reaching the end of their serviceable life or need repair work. As part of the road rehabilitation, culverts would be examined and cleaned, lined, or recycled and replaced, as necessary. The repairs would be designed to add 20 years to the service life, and may require minor shifts in culvert alignments as well as some culvert extensions. With the exception of new drainage structures associated with the reconfiguration of the Mount Angeles Road and Hurricane Ridge Road intersection, no culverts would be installed in new locations.

A recommendation for cleaning, lining, or replacing each culvert has been made based on the condition of the culvert, grade of the culvert, and depth of fill over the culvert. The results of this recommendation are presented in detail in the following sections. In addition, there are numerous culverts in Section III that would require the installation of headwalls to prevent damage during maintenance cleaning. The outlets for these culverts would also require placement of riprap on the down-gradient side to reduce downslope erosion.

For the entire length of the road, which is generally 24- to 26-feet wide, the travel lanes would be repainted from the current 12-foot to an 11-foot width, increasing the available shoulder space in some areas without widening the road (figure 3).

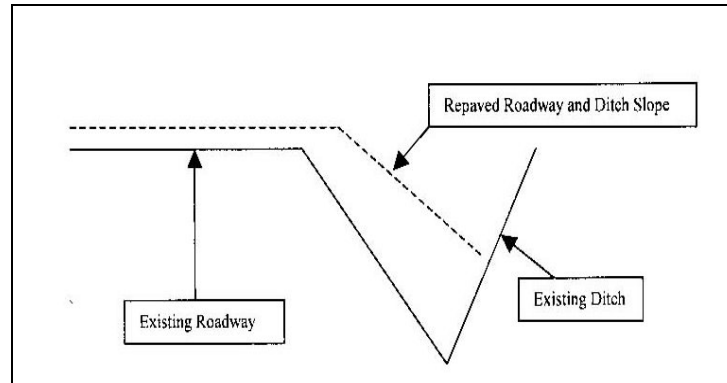


**FIGURE 3. TYPICAL ROAD SHOULDER ALONG HURRICANE RIDGE ROAD BELOW THE ENTRANCE STATION**

The subgrade (prepared base on which the asphalt top is placed) would be reshaped for a consistent crown and a 4% maximum super elevation on curves. The subgrade would also be lowered by removing material, where necessary, to ensure that the new asphalt width is the same as the existing 24- to 26-foot asphalt top. Much of the roadway would still be higher in elevation than the existing fillslopes and foreslopes. The following techniques would be used to compensate for the elevation difference between the new asphalt top and the fillslopes / foreslopes:

- Acceptable material removed from the subgrade would be blended with the existing fillslope and foreslope material.
- Ditches that are over-steepened would be corrected by grading the foreslope into the edge of the ditch (figure 4).

- Aggregate-soil would be added to the road edge. The aggregate-soil mix may come from material onsite, or may need to be imported.



**FIGURE 4. ROAD AND DITCH CONFIGURATION**

Subexcavation areas have been selected along the entire length of the road for locations primarily that indicate local instability or have soft, unstable subgrade. These are described in detail in the following sections. Approach aprons for roads that intersect with Hurricane Ridge Road would be surfaced with asphalt and tapered to the width of the approach road.

Due to their deteriorated condition and age, all guardrails in the project area would be replaced or recycled, as needed, with the exception of poorly placed or unnecessary guardrail, which would be removed. Some guardrails would be extended or lengthened for safety considerations.

### **Roadway Rehabilitation, Section I – Hurricane Ridge Visitor Center to the Tunnels (Station 932+00 to Station 482+10, approximately Mile Post (MP) 17.7 to MP 8.9)**

#### **Culvert Work**

Table 2 summarizes the culvert treatment recommendations from the Federal Highway Administration for Section I.

#### **Road Work**

The existing road prism in Section I of Hurricane Ridge Road typically consists of 12-foot travel lanes with 2-foot paved shoulders and 1-foot gravel shoulders. The fillslope and foreslope in this section generally catch the asphalt shoulder edge. In some areas from the tunnels to the Hurricane Ridge Visitor Center parking area, the existing bench is 1 to 2 feet

TABLE 2. CULVERT TREATMENT RECOMMENDATIONS – SECTION I

Culvert Replacements		PVC Slip Line Culverts	Install Concrete Headwalls	
Station (Approximate MP)			506+80 (9.4)	651+11 (12.1)
			511+03 (9.5)	671+34 (12.5)
			535+12 (9.9)	679+46 (12.7)
			537+76 (10.0)	686+00 (12.8)
			553+26 (10.3)	696+04 (13.0)
			558+09 (10.4)	701+12 (13.1)
	616+33 (11.5)	855+64 (16.0)	563+98 (10.5)	704+15 (13.1)
	619+87 (11.6)		570+66 (10.6)	734+51 (13.7)
	848+63 (15.9)		576+23 (10.7)	755+40 (14.1)
			580+77 (10.8)	760+64 (14.2)
			585+28 (10.9)	771+90 (14.4)
			613+48 (11.4)	772+98 (14.5)
			630+60 (11.8)	813+38 (15.2)
			635+31 (11.8)	835+63 (15.6)
			639+11 (11.9)	864+89 (16.2)
			644+81 (12.0)	926+80 (17.4)

wider than the rest of the road. This section of the road would be designed for a 20-year life through the following measures:

- pulverize existing asphalt pavement 6-inches deep to create recycled aggregate base
- add a 4-inch new asphalt pavement top, placed in two equal lifts
- allow for a 6-inch maximum rise in road elevation
- add a 12-inch wide aggregate-soil / subbase mix to the existing fillslope and foreslope soils to compensate for the rise in elevation

The paving would occur within the existing travel lanes and shoulders. Prior to repaving, the top 6 inches of asphalt and aggregate base would be recycled through a milling process where material would be ground and redistributed. The recycled material would be reshaped, adding gravel fill where insufficient material exists to reestablish the crown or to establish the required super elevation. The new lifts of asphalt paving would then be placed over the top of the reshaped, recycled material. The reshaping of the recycled aggregate base and placing the new pavement would add 3 to 6 inches to the road surface elevation, depending on the necessary thickness to achieve grade. Some blending would be necessary within the paved and gravel shoulders to compensate for the increased thickness. Drainage ditch configurations are over steepened and the blending would also allow the ditch slope closest to the roadway to be flattened; however, flow would be maintained (see figure 4). An overlay would be placed on the existing asphalt in the Hurricane Ridge Visitor Center parking lot in three segments.

There is one area in Section I that would require subexcavation to improve roadway stability. The area between Stations 502+20 and 503+00 (at approximately MP 9.3) would be excavated approximately 4 feet, geofabric (net-shaped synthetic polymer-coated fibers that are used to reinforce earth-fill slopes) would be installed, and shot rock may be overlain as a geofabric reinforcement. The subexcavation would only be required in the left lane, and would be completed from the centerline to the outslope.

The sidewalk at the parking area near Station 620+80 (approximately MP 11.6) would be moved or relocated on the east (uphill) end. The sidewalk and guardrail in this area have been eroded and there is a steep drop-off. The entire parking area would be reconfigured to realign all features on the uphill end to prevent further damage from erosion and curbing would be replaced; however, disturbances would not extend beyond the existing footprint.

Forty-seven turnouts occur in this section of Hurricane Ridge Road; 25 are paved and 22 are gravel. The turnouts represent pull-off areas large enough to accommodate one to two vehicles that would allow slower moving vehicles to move out of the line of traffic and to provide informal recreational opportunities. The paved turnout at Station 858+24 (approximately MP 16.1) would be scaled back and the previously disturbed area reclaimed and revegetated. In addition, gravel turnouts at Stations 630+36 and 699+68 (approximately MP 11.7 and 13, respectively, would be paved.

### **Roadway Rehabilitation, Section II – Tunnels to the Heart O’ the Hills Entrance Station (Station 482+10 to Station 284+00, approximately MP 8.9 to MP 5.2)**

#### **Culvert Work**

Table 3 summarizes the culvert treatment recommendations from the Federal Highway Administration for Section II.

**TABLE 3. CULVERT TREATMENT RECOMMENDATIONS – SECTION II**

<b>Station (Approximate MP)</b>	<b>Culvert Replacements</b>	<b>PVC Slip Line Culverts</b>
	292+80 (5.4) 374+16 (6.9) 477+99 (8.9)	308+95 (5.7) 315+81 (5.8) 346+13 (6.4) 348+63 (6.4) 350+78 (6.5) 367+82 (6.8) 380+73 (7.0)

#### **Road Work**

The existing road prism in Section II of Hurricane Ridge Road typically consists of 12-foot travel lanes with 2-foot paved shoulders and 1-foot gravel shoulders. The fillslope and foreslope in this section generally catch the asphalt shoulder edge. In some areas between the tunnels and the Heart O’ the Hills entrance station, the existing bench is 1- to 2-feet wider



than the rest of the road. This section of the road would be designed for a 20-year life through the same measures identified for Section I as discussed below.

- pulverize existing asphalt pavement 6-inches deep to create recycled aggregate base
- add a 4-inch new asphalt pavement top, placed in two equal lifts
- allow for a 6-inch maximum rise in road elevation
- add a 12-inch-wide aggregate-soil / subbase mix to the existing fillslope and foreslope soils to compensate for the elevation rise

The paving would occur within the existing travel lanes and shoulders. Prior to repaving, the top 6 inches of asphalt and aggregate base would be recycled through a milling process where material would be ground and redistributed. The recycled material would be reshaped, adding gravel fill where insufficient material exists to reestablish the crown or to establish the required super elevation. The new lifts of asphalt paving would then be placed over the top of the reshaped, recycled material. The reshaping of the recycled aggregate base and placing the new pavement would add 3 to 6 inches to the road surface elevation, depending on the necessary thickness to achieve grade. Some blending would be necessary within the paved and gravel shoulders to compensate for the increased thickness. Drainage ditch configurations are over steepened and the blending would also allow the ditch slope closest to the roadway to be flattened; however, flow would be maintained (see figure 4).

Subexcavation of Hurricane Ridge Road to improve stability in Section II would occur in several locations. The landslide area between Stations 326+50 and 342+50 (approximately MP 6.0 to MP 6.3) would be drained through the installation of a sheet drain. The drain installation would involve excavating approximately 3 feet below the road surface, installing geofabric, and possibly overlaying shot rock as a geogrid reinforcement to promote better drainage in the slide area. The sheet drain would require subexcavation for the full width of the road, and would daylight at the outslope of the landslide area; drainage would be directed away from the landslide. Once completed, the excavated outslope area would be revegetated.

The parking area at Station 478+25 (approximately MP 8.9), located in a landslide area, would be reconfigured to remove weight from the landslide. Eight parking spaces would be eliminated on the north end of the parking area. The south end of the parking area would be expanded to provide two new spaces, while the angle of spaces on the north end would be reconfigured to provide additional parking. The current island separating the parking area from the road would be narrowed to allow new entrance and exit lanes, and curbing would be established. Additional treatments considered for the north end of this parking area would include removing a wedge of material up to 10-feet in depth, and improving drainage to reduce weighting and wetting of the slide.

Other subexcavation areas in Section II are summarized in table 4.

**TABLE 4. ADDITIONAL SUBEXCAVATION AREAS OF HURRICANE RIDGE ROAD – SECTION II**

Station Limits (approximate MP limits)	Excavation Depth (Below Base Course)	Geofabric Separator	Geofabric Reinforcement	Full-Width or Left Lane Subexcavation
303+15 to 304+00 (MP 5.6)	3 feet	Yes	No	Left Lane
308+80 to 312+75 (MP 5.7)	3 feet	Yes	To Be Determined	Left Lane
379+00 to 381+00 (MP 7.0)	3 feet	Yes	Yes	Full-Width
382+30 to 383+60 (MP 7.0 to 7.1)	3 feet	Yes	Yes	Full-Width
426+50 to 430+00 (MP 7.9 to 8.0)	3 feet	Yes	Yes	Full-Width
451+00 to 452+80 (MP 8.4)	3 feet	Yes	Yes	Full-Width

Five turnouts occur in this section of Hurricane Ridge Road, and all are paved. The paved turnout at Station 435+80 (approximately MP 8.1) would be scaled back and the previously disturbed area reclaimed and revegetated.

### **Roadway Improvements, Section III – Heart O’ the Hills Entrance Station to the Intersection with Mount Angeles Road (approximately Station 284+00 to Station 10+00, Approximately MP 5.2 to MP 0.0)**

#### **Culvert Work**

Table 5 summarizes the culvert treatment recommendations from the Federal Highway Administration for Section III.

**TABLE 5. CULVERT TREATMENT RECOMMENDATIONS – SECTION III**

Station (Approximate MP)	Culvert Replacements	PVC Slip Line Culverts
	9+11 (0.0) 10+45 (0.0) 11+07 (0.0) 105+24 (1.8) 115+35 (2.0) 126+70 (2.2) 138+48 (2.4) 168+35 (3.0) 235+08 (4.3) 282+25 (5.2)	34+47 (0.5)35+93 (0.5)114+75 (2.0)119+58 (2.1)133+38 (2.3)141+47 (2.5)153+25 (2.7)165+42 (2.9)191+29 (3.4)196+76 (3.5)199+08 (3.6)227+91 (4.1)241+95 (4.4)265+30 (4.8)274+89 (5.0)

## Road Work

In this section of Hurricane Ridge Road, the prism typically consists of 12-foot-wide travel lanes and paved shoulders as narrow as 1 foot, and no gravel shoulders (see figure 3). The fillslope and foreslope in this section generally catch the existing edge of the asphalt shoulder with little, if any, additional gravel shoulder. This section would be designed for a 20-year life through the following measures:

- pulverize existing asphalt pavement 3-inches deep to create recycled aggregate base
- add a 3-inch new asphalt pavement top
- allow for a 3-inch maximum rise in road elevation
- add 9-inch-wide aggregate-soil / subgrade mix to the existing fillslope and foreslope soils to compensate for the elevation rise

Paving would occur within the existing travel lanes and shoulders. Prior to repaving, the top 3 inches of existing asphalt pavement would be recycled through a milling process in which it would be ground and laid back down in place. A new 3-inch layer of pavement would then be placed over the top of this recycled material. The recycling of the existing asphalt pavement and placing the new paving would add approximately 3 inches to the road surface elevation.

Widening the shoulders by narrowing the travel lanes would allow blending to occur on disturbed areas (e.g., the existing shoulders and roadway), minimizing the potential for additional impacts while achieving the necessary blending. Where necessary, the road crown would be reestablished to promote better drainage.

Between Stations 210+00 and 214+50 (approximately MP 3.8 and 3.9) is a landslide area that would be stabilized. In this area, the outer traffic lane would be excavated to a depth of approximately 6 feet and backfilled using fill material with geogrid to create a bench-type structure with more stability. The excavation and geogrid installation would follow a trench, rather than excavating all the way to the outslope of the treatment area.

There is one other area in Section III that would require subexcavation to improve roadway stability. The area between approximately Station 256+50 and 259+50 (approximately MP 4.7) would be excavated approximately 3 feet, and geofabric would be installed. A full-width subexcavation would be required.

An informal, earthen turning lane (figure 5) that has developed near the Heart O' the Hills entrance station at the Lake Angeles / Heather Park trailhead access road (a result of vehicles turning into Lake Angeles / Heather Park trailhead when traffic is backed up at the entrance station) would be widened and paved.

Currently, there is an employee parking area above the Heart O' the Hills entrance station. The paved area has been informally expanded by parking vehicles on the flat, earthen area adjacent to the formal, paved parking. This informal parking area would be formalized through paving and curbing.



**FIGURE 5. INFORMAL EARTHEN TURNING LANE AT HEART O' THE HILLS ENTRANCE STATION**

Six turnouts occur in this section of Hurricane Ridge Road; five are paved and one is gravel. The paved turnout at Station 208+16 (approximately MP 3.8) and the gravel turnout at Station 265+95 (approximately MP 4.8) would be scaled back and the previously disturbed area reclaimed and revegetated.

### **Roadway Improvements at Hurricane Ridge Road and Mount Angeles Road Intersection**

The Hurricane Ridge Road and Mount Angeles Road intersection would be reconfigured (figure 6) so that the primary traffic flow is onto Hurricane Ridge Road. Currently, the intersection is confusing; many Park visitors miss the turn for Hurricane Ridge Road and enter a residential neighborhood. The changes to the intersection would include signage to help clarify the route to Hurricane Ridge Road and reconfiguration to direct visitors to Hurricane Ridge.

### **Sustainability**

The National Park Service has adopted the concept of sustainable design as a guiding principle of facility planning and development. The objectives of sustainability are to design park facilities to minimize adverse effects on natural and cultural values, to reflect their environmental setting, and to maintain and encourage biodiversity; to construct and retrofit facilities using energy efficient materials and building techniques; to operate and maintain



facilities to promote their sustainability; and to illustrate and promote conservation principles and practices through sustainable design and ecologically sensitive use. Essentially, sustainability is living within the environment with the least impact on the environment. The preferred alternative subscribes to and supports the practice of sustainable planning, design, and use of Hurricane Ridge Road.

## **ENVIRONMENTALLY PREFERRED ALTERNATIVE**

In accordance with Director's Order – 12, the National Park Service is required to identify the “environmentally preferred alternative” in all environmental documents, including environmental assessments. The environmentally preferred alternative is determined by applying the criteria suggested in NEPA, which is guided by the Council on Environmental Quality. The Council on Environmental Quality provides direction that “[t]he environmentally preferred alternative is the alternative that would promote the national environmental policy as expressed in section 101 of NEPA, which considers:

Fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations.

1. Assuring for all generations safe, healthful, productive, and esthetically and culturally pleasing surroundings.
2. Attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.
3. Preserving important historic, cultural, and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice.
4. Achieving a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities.
5. Enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources” (NEPA, section 101).

The no-action alternative is not the environmentally preferred alternative because it would not:

- address the deteriorating road surface that creates safety hazards for employees and visitors, especially bicyclists (criteria 2, 3, and 5)
- reduce the need for road maintenance (criteria 1, 2, 3, and 6)
- address drainage concerns associated with deteriorating culverts, as well as road instability due to landslide areas (criteria 1, 2, 3, 4, and 5)

The National Park Service preferred alternative is the environmentally preferred alternative because it would:

- prevent the loss of natural resources by reducing the potential for landslides (criteria 1 and 4)

- protect public health, safety, and welfare by repairing and stabilizing deteriorating road surfaces (criteria 2 and 3)
- improve operations efficiency and sustainability by reducing the need for ongoing road maintenance and the consumption of depletable resources associated with such maintenance (criteria 1 and 6)
- protect employee safety and welfare by reducing the potential for landslides, repairing and stabilizing road surfaces, and reducing the need for ongoing road maintenance (criteria 3)

In short, this alternative would provide protection of the visitor experience and improve Park operations with minimal disturbance to natural and cultural resources.

## **STAGING AREA**

Construction equipment would be staged on the segment of road where the activity is occurring, or in designated turnouts. Very little material, other than the actual road equipment, would need to be stored onsite. No asphalt or fill staging or materials storage would be allowed within Olympic National Park. In addition, any construction-related offices or laboratories would be located outside the Park.

## **MITIGATION MEASURES**

Mitigation measures are presented as part of the preferred alternative. These actions have been developed to lessen the adverse effects of the preferred alternative. Mitigation measures for the proposed project are shown in table 6.

## **GENERAL CONSTRUCTION SCHEDULE AND COSTS**

It is anticipated that road work in Sections I and II could begin in March of 2005 and would be completed by September 2005. If construction is not completed in that time period, construction would also occur between March 2007 and September 2007. Road work in Sections I and II could also occur between October 2005 and February 2006 as approved by the Park, subject to the conditions listed in table 8 under "Visitor Experience." Road work in Section III would begin in March of 2005 and end by September 2006. The construction schedule is dependent on congressional reauthorization for spending on surface transportation programs at expected levels. Delays in congressional reauthorization or approval at lower than expected levels could result in delays to the constructions schedule. Anticipated costs for this project range from \$14 million to \$18 million. Cost-saving techniques and new technology would be reviewed throughout the project to reduce costs.

**TABLE 6. MITIGATION MEASURES**

RESOURCE AREA	MITIGATION MEASURE
<b>General Considerations</b>	Before the beginning of construction, construction limits would be surveyed and staked and may be marked with construction fencing, tape, flagging, snow fencing, or some similar material, as necessary. The construction limits identify and limit the area of construction activity. The Contractor is responsible for ensuring that all work stays inside the construction limits. All protection measures would be clearly stated in the construction specifications and workers would be instructed to avoid conducting activities beyond the construction limits. This does not exclude necessary temporary structures such as erosion control fencing.
	The Federal Highway Administration's project engineer would ensure that the project remains confined within the parameters established in the compliance documents and that mitigation measures are properly implemented.
	Construction equipment staging would occur within the roadway for active work areas or at designated turnouts. Construction related offices or laboratories would be located outside Park boundaries.
	All demolition debris, including visible concrete and metal pieces, would be immediately hauled from the Park to an appropriate disposal location. All tools, equipment, barricades, signs, surplus materials, and rubbish would be removed from the project work limits upon project completion. Any asphalt surfaces damaged due to work on the project would be repaired to original condition.
	Contractor would be required to maintain strict garbage control so that scavengers (e.g., corvids) are not attracted to the project area. No food scraps would be discarded or fed to wildlife.
	Best management practices for drainage and sediment control would be implemented to prevent or reduce nonpoint source pollution and minimize soil loss and sedimentation in drainage areas.
	For safety purposes, the road would be closed to bicyclists during construction.
<b>Air Quality</b>	Fugitive dust would be controlled by periodic water sprinkling.
	Construction vehicle engines would not be allowed to idle for extended periods of time. Visitors stopped due to construction delays would be encouraged to turn off their engines.
<b>Soils</b>	During periods of heavy rainfall, the project engineer could issue a temporary stop order and work would be halted. During these work stoppage periods, project personnel would continue to check the silt fences and check dams, maintain the silt fences in effective condition, and remove accumulated sediment, as necessary, to ensure stabilization is maintained.
	Erosion and sediment control would be required.
	Topsoil would be removed from areas of construction and stored for later reclamation use. The topsoil would be respread in as near the original location as possible and supplemented with scarification, mulching, seeding, and/or planting with species native to the immediate area.
<b>Vegetation</b>	A revegetation plan would be developed to restore disturbed areas.
	Ground surface treatment would include grading to natural contours, topsoil replacement, seeding, and planting. This work would occur as soon after the completion of construction as possible.
	Reclaimed areas would be monitored after construction to determine if reclamation efforts are successful or if additional remedial actions are necessary. Remedial actions could include installation of erosion control structures, reseeding, and/or replanting the area, and controlling non-native plant species.
	In an effort to avoid introduction of non-native / noxious plant species, no imported hay bales would be used during revegetation. On a case-by-case basis, the following materials may be used for any erosion control dams that may be necessary: certified weed-free rice straw, cereal grain straw that has been fumigated to kill weed seed, and wood excelsior bales.



TABLE 6. MITIGATION MEASURES

RESOURCE AREA	MITIGATION MEASURE
	<p>Undesirable plant species would be controlled in high-priority areas and other undesirable species would be monitored and controlled, as necessary. To prevent the introduction of, and minimize the spread of non-native vegetation and noxious weeds, the following measures would be implemented during construction:</p> <ul style="list-style-type: none"> <li>▪ Minimize soil disturbance.</li> <li>▪ Pressure wash and/or steam clean all construction equipment, except hauling vehicles, before entering the Park to ensure that all equipment, machinery, rocks, gravel, or other materials are cleaned and weed free before entering Olympic National Park.</li> <li>▪ Pressure wash hauling vehicles before entering the Park for the first time; subsequent entries would not require pressure washing unless the vehicle shows signs of mud, plant material, or other substances that could be considered harmful.</li> <li>▪ Cover all haul trucks bringing asphalt or other fill materials from outside the Park to prevent seed transport.</li> <li>▪ Limit vehicle and equipment parking to within construction limits, existing roadways, parking lots, or the access routes.</li> <li>▪ Limit disturbance to roadsides, culvert areas, and other areas inside the designated construction limits. No machinery or equipment should access areas outside the construction limits.</li> <li>▪ Obtain all fill, rock, or additional topsoil from the project area, if possible. If not possible, then obtain weed-free fill, rock, or additional topsoil from sources outside the Park. Some material may not be required to be weed free, such as asphalt pavement and roadway aggregate (if buried by other material). The weed-free condition of the material from sources outside the Park would need to be approved by the Park. If material from an outside source is not weed free, then the Park may either reject use of material from that source or approve use if appropriate measures are taken to treat the material.</li> <li>▪ Initiate revegetation of a disturbed area within 14 days of the last disturbance of the area, except when the area would be disturbed again in 21 days.</li> <li>▪ Monitor disturbed areas for up to 3 years following construction to identify growth of noxious weeds or non-native vegetation. Treatment of non-native vegetation would be completed in accordance with NPS-13, <i>Integrated Pest Management Guidelines</i>.</li> <li>▪ To avoid transporting undesirable plant species in excavated soils, the following soil transport measures would be implemented: <ul style="list-style-type: none"> <li>- From the intersection with Mount Angeles Road to Heart O' the Hills entrance station, soils would not be transported uphill beyond the entrance station.</li> <li>- From the Heart O' the Hills entrance station to the tunnels, surface and subsurface soils would be transported anywhere within this segment or downhill.</li> <li>- From the tunnels to Third Peak (approximately 3 miles from the Hurricane Ridge Visitor Center) transport of surface and subsurface soils would be limited to within this segment with no soils transported outside this segment either uphill or downhill.</li> <li>- From Third Peak to the Hurricane Ridge Visitor Center, no transport of surface or subsurface soils from lower segments to this segment would be allowed. Materials from this segment can be transported downhill.</li> </ul> </li> </ul> <p>To maximize vegetation restoration efforts after completion of construction activities, the following measures would be implemented:</p> <ul style="list-style-type: none"> <li>▪ Salvage topsoil, as well as incidental native vegetation (as feasible), from construction areas for reuse during restoration on disturbed areas.</li> <li>▪ Monitor revegetation success for up to 3 years following construction, implementing remedial and control measures as needed.</li> </ul>
<b>Threatened and Endangered Species</b>	Scheduling would delay construction in areas of occupied marbled murrelet habitat as late in the breeding season as possible, minimizing impacts to this species.
	To protect marbled murrelets during sensitive feeding periods, construction activities would not occur two hours before and after sunrise or sunset in the road segment from the tunnels to the Heart O' the Hills entrance station during the period of April 1 to September 15.
	Contractor would be required to maintain strict garbage control to prevent scavengers (e.g., crows), which are predators on murrelet nests, from being attracted to the project area. No food scraps would be discarded or fed to wildlife.

**TABLE 6. MITIGATION MEASURES**

RESOURCE AREA	MITIGATION MEASURE
<b>Visitor Experience</b>	Total construction-related traffic delays would be limited to 30 minutes in each direction if there are less than 10 vehicles per hour. Delays would be limited to a maximum of 20 minutes in each direction if there are over 10 vehicles per hour. Flaggers would record delay times at stopping points and the results would be reported to the Federal Highway Administration's project engineer. Immediate access would be provided to any emergency vehicles.
	Flaggers, pilot cars, signing, variable message signs and/or the newest technology, as appropriate, would be used to manage traffic.
	No holiday or night time work would be allowed. Weekend work (Friday through Sunday) would be allowed September through the opening of the ski area in late December and in April and May. No work would be permitted from December 24 through January 2. In the event of unforeseen circumstances, the Park superintendent or his designated representative may consider weekend work during critical times.
	<p>During times the road is open to the public, construction operations would only occur on part of the road width so that one traffic lane is available to public traffic at all times under alternate one-way traffic control with the following conditions:</p> <ul style="list-style-type: none"> <li>▪ One lane of traffic would be open at all times from the visitor center to the entrance station year round, and for the total length of the road during the spring, summer, and fall visitor season.</li> <li>▪ Full-width construction could be possible above the Heart O' the Hills entrance station as permitted for specified periods of time in accordance with the winter schedule and also during the shoulder seasons (March to April, September to November) if the road is closed for weather conditions, snowplowing, and Park operations, as determined by the Park. Prior notice would be required to assure winter users are not confined in the upper area. If necessary during road closures, visitors leaving the Park and requiring passage through the construction zone would be provided escorts for safety purposes.</li> <li>▪ Limited occasions such as replacement of deep culverts or unforeseen problems may require temporary short-term full closure of the road. Such full closures would be for the minimal time required to complete the work activity or correct the problem.</li> </ul>
	No more than two sections of road would be under alternate one-way traffic control at any one time.
	No delays would be allowed from 7:00 A.M. to 9:00 A.M. and 4:00 P.M. to 6:00 P.M. in the project area below the Heart O' the Hills entrance station.
	A traffic management plan would be required from the Contractor for review and approval by the Federal Highway Administration and the Park. This plan would include: proposed areas of construction and anticipated delays, safety considerations, estimated lengths of delay, and estimated number of vehicles stopped at any one point, as applicable to the construction. The 30-minute delay in each direction would be considered maximum and the plans would include proposals for less than 30-minute delays for the total length of the road. The plan would also include, as necessary, a limit on the number of vehicles that could be stopped at any one point to avoid backup into critical areas such as the entrance station and intersections.
	Contractor would provide a weekly delay schedule with daily updates to the Federal Highway Administration's project engineer for management of visitation and Park operations.
	Announcement through public release to radio stations, press, publications, other public information outlets, and Web sites, as appropriate, would be utilized as needed. The Contractor would also provide daily delay schedules, variable message boards, coordinated with the Federal Highway Administration's project engineer, and temporary construction signs in and outside the Park.
	Hurricane Ridge Road would be closed to bicycle traffic during the construction period due to safety concerns.
	If justified by low traffic volumes, and with prior notice to the public and Park operations, delays in opening the road above Heart O' The Hills may be considered until 10:00 A.M.

## **ALTERNATIVES CONSIDERED BUT DISMISSED**

Alternatives to the no-action and preferred alternatives were considered, including widening the road from the Heart O' the Hills entrance station to the intersection with Mount Angeles Road to account for the increased pavement height from repaving activities. This alternative was dismissed from further consideration because in most areas of this road segment, widening the road would have required extending fill slopes adjacent to Hurricane Ridge to provide a base for the wider shoulders. This would create an unnecessary environmental impact and additional costs that could be avoided by simply decreasing the width of the travel lanes and blending of the shoulders, as described for the preferred alternative in this environmental assessment. Additionally, this treatment would not have been feasible in the other segments of Hurricane Ridge Road because of the steep roadsides. Therefore, this alternative was dismissed from further consideration.

Other alternative actions considered include eliminating the parking area at approximately mile 9.0, which is located in a landslide area. However, this would eliminate a popular visitor viewing spot and would not minimize the potential for land sliding that could eventually undermine the road base stability. Therefore, this alternative was dismissed from further consideration. Several alternatives to the reconfiguration of the Hurricane Ridge Road and Mount Angeles Road intersection were also considered, including changing the signage, installing barriers, and forcing all traffic to make the turn onto Hurricane Ridge Road and allowing local residents to make a turn back onto Mount Angeles Road. However, the various options would not eliminate the confusing two-way traffic patterns that exist, or would create traffic patterns that would inconvenience local residents (i.e., create a difficult left turn for accessing Mount Angeles Road). Therefore, these alternatives were dismissed.

An alternative of a surface recycle / overlaying for the entire Hurricane Ridge Road was considered. This alternative was dismissed because the service life of the road would only be lengthened by a few years. The various slopes on the banked curves would create inconsistencies in the driving conditions. Also, the flat spots without a crown would collect water.

## COMPARATIVE SUMMARY OF NO-ACTION AND PREFERRED ALTERNATIVES

TABLE 7. COMPARATIVE SUMMARY OF NO-ACTION AND PREFERRED ALTERNATIVES

NO-ACTION ALTERNATIVE	PREFERRED ALTERNATIVE
<p>There would be no improvements to the existing Hurricane Ridge Road at Olympic National Park. Olympic National Park would respond to future needs and conditions associated with Hurricane Ridge Road without major actions or changes from the present course. This would include routine road work and maintenance such as culvert and ditch maintenance, patching, striping, and shoulder work (e.g., vegetation and rock clearing). The cost and time for road maintenance would continue to increase with resulting delays in visitor traffic movement.</p> <p><u>Meets project objectives?</u></p> <p><b>No.</b> Continuing the existing roadway maintenance would neither improve road surface conditions for Park employees and visitors nor improve the stability of the road. Culvert maintenance would continue to damage culvert inlets and outlets, limiting the utility of these drainage systems. An adequate, formal turning lane and sufficient formal employee parking, would not be established at the Heart O' the Hills entrance station. The potential for visitors to take the wrong route at the intersection of Mount Angeles Road and Hurricane Ridge Road would remain.</p>	<p>The deteriorated road surface would be repaved along the entire length of Hurricane Ridge Road, and road shoulder width would be increased by reducing the width of travel lanes from 12 to 11 feet.</p> <p>Landslide areas affecting the integrity of the road parking areas would be stabilized; drainage improvements would be made to reduce the potential for future slides. Culverts would be cleaned, lined, or replaced to enhance drainage beneath the road. Headwalls and riprap would be established at some culverts to reduce the impact of maintenance and erosion.</p> <p>The earthen area used as informal employee parking, as well as the turning lane to the Heather Lake access road (Lake Angeles trailhead and the Lake Dawn community), would be paved to reduce ground disturbance associated with these uses.</p> <p>The intersection at Mount Angeles Road and Hurricane Ridge Road would be reconfigured to reduce confusion for motorists attempting to enter the Park.</p> <p>Four turnouts along the road would be scaled back, while two gravel turnouts would be paved. Reclaimed areas would be revegetated and restored to a natural state.</p> <p><u>Meets project objectives?</u></p> <p><b>Yes.</b> Repaving, stabilizing landslide areas, and reconfiguring the intersection along Hurricane Ridge Road would provide a safe corridor for motorists and bicyclists in this section of the Park. Improving drainage through culverts and landslide areas would also help prevent further deterioration of the road. Ground disturbance associated with vehicles parking and turning on soil surfaces would also be eliminated or minimized through the formalization of such areas.</p>

## COMPARATIVE SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

**TABLE 8. COMPARATIVE SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS**

IMPACT TOPIC	NO-ACTION	PREFERRED ALTERNATIVE
<b>Air Quality</b>	There would be no new impacts to air quality.	The impacts to air quality from construction activities would be short term, negligible, and adverse, primarily from increased vehicle emissions and fugitive dust. Once construction is complete, there would be no long-term impacts to air quality.
<b>Soils</b>	There would be no new impacts to soils.	Short-term impacts to soil resources would be localized, minor, and adverse. Over the long term, soil resources would be restored to natural conditions and long-term, adverse impacts would be negligible. In landslide areas, long-term, moderate, beneficial impacts would occur as a result of soil stabilization.
<b>Vegetation</b>	Under the no-action alternative, there would be no new ground-disturbing activities with the potential to affect vegetation. Ongoing road maintenance such as ditch, culvert, and shoulder work (e.g., vegetation and rock clearing) could adversely affect vegetation, however, such effects would be long term, localized, and negligible.	Short-term, minor, adverse impacts to roadside vegetation are anticipated from project activities. A long-term, minor, beneficial impact to local vegetation is anticipated from removing non-native vegetation in the Hurricane Ridge Road corridor and revegetating with native species.
<b>Wildlife</b>	There would be no new impacts or changes to impacts to wildlife under the no-action alternative. Impacts to wildlife from collisions with automobiles, as well as disturbances associated with human activities in the parking areas, turnouts, and visitor center (e.g., feeding, harassment, noise) would continue, having long-term, localized, negligible, adverse effects.	Implementing the preferred alternative is expected to have local, short-term (duration of the project and revegetation / habitat restoration), negligible to minor, adverse impacts on wildlife. The rehabilitation of approximately 22.6 acres of previously disturbed areas, including the removal of non-native vegetation and revegetation with native species, would have a local, long-term, negligible, beneficial effect on wildlife.
<b>Threatened and Endangered Species and Species of Special Concern</b>	There would be no new impacts, or changes to impacts, on threatened, endangered, or sensitive species under the no-action alternative. Disturbances associated with traffic noise would continue to be inconsequential.	Use of any construction equipment on Hurricane Ridge Road, with mitigation, would cause: <ul style="list-style-type: none"> <li>▪ local, short- and long-term, minor to moderate, adverse impacts on marbled murrelets</li> <li>▪ local, short- and long-term, minor to moderate, adverse impacts on Northern spotted owls</li> <li>▪ no impacts on bald eagles</li> </ul>

**TABLE 8. COMPARATIVE SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS**

IMPACT TOPIC	NO-ACTION	PREFERRED ALTERNATIVE
		The restoration of 22.6 acres of land, including removal of non-native species and revegetation with native species, could have a local, long-term, negligible, beneficial effect on Northern spotted owls and marbled murrelets, but would not affect bald eagles. Local, short- and long-term, negligible, adverse impacts to individual marbled murrelets could occur from the potential increased presence of corvids in the construction zone (although mitigation measures should reduce this impact).
<b>Visitor Experience</b>	The existing condition on Hurricane Ridge Road constitutes a short- and long-term, negligible to minor, adverse impact to visitor experience. Increased landslide movement would result in short-term, minor to moderate, adverse impacts to visitor experience.	Over the short term, local, moderate, adverse effects to visitor use and experience would be expected during project construction as a result of noise, dust, fumes, delays, and construction vehicle traffic. Short-term, minor to moderate impacts are anticipated as a result of closing the road to bicycle use during construction.  Local, long-term, minor, beneficial effects on visitor experience are anticipated under the preferred alternative. These effects would be a result of improved travel conditions on the repaved surface; widened road shoulders that would provide safer conditions for the many bicyclists that ride Hurricane Ridge Road; improved and additional parking at the visitor center; improvements to minimize continued landslide movement and resulting road / parking area damage; and the reconfiguration of the Mount Angeles Road / Hurricane Ridge Road intersection to better direct visitors to the Park.
<b>Park Operations</b>	There would be no changes to Park operations related to Hurricane Ridge Road. The existing condition constitutes a long-term, negligible, adverse impact to Park operations. Should landslide movement increase, there would be short-term, minor to moderate, impacts to Park operations.	Long-term, minor, beneficial effects would result from the reduction in road maintenance requirements and associated costs in the road corridor.
<b>Socioeconomic Environment</b>	There would be no new impacts to the socioeconomic environment.	Impacts to tourism and socioeconomics in the Port Angeles area during the construction period would be short term, negligible, and adverse. Worker spending would provide a negligible beneficial contribution to the overall economy during the short-term construction period.

## AFFECTED ENVIRONMENT

Detailed information on resources in Olympic National Park may be found in the *Statement for Management: Olympic National Park - 1996* (NPS 1996), and the *Olympic National Park Resource Management Plan* (NPS 1990, 1999). A summary of the resources associated with this project follows.

## LOCATION AND GENERAL DESCRIPTION OF THE PARK

Olympic National Park is located on the Olympic Peninsula in the northwest corner of Washington State (figure 7). The eastern edge of the Park is only 30 to 40 miles west of the Seattle-Tacoma corridor. Bordered by the Pacific Ocean on the west, the Strait of Juan de Fuca to the north, and Hood Canal to the east, the peninsula and Park have been geographically isolated for eons. As a result of this isolation, at least 16 animal and 8 plant species supported on the peninsula do not occur anywhere else in the world (NPS 1996).



wilderness. It is surrounded by a complex network of lands managed by federal and state agencies, American Indian tribes, and private landowners (NPS 1996).

The segment of Hurricane Ridge Road proposed for rehabilitation and resurfacing begins at the Hurricane Ridge Visitor Center and ends at the intersection with Mount Angeles Road. Intersection improvements are also part of the project. Hurricane Ridge Road, above the Heart O' the Hills entrance station, has an average daily traffic count of 400 vehicles with an average of 10 accidents annually. The present road was built in the late 1950s, was last resurfaced in the early 1980s, and has not been chip sealed or fog sealed since. The road has received only routine maintenance such as asphalt paving and striping, and has numerous areas of alligatoring, rutting, potholes, and raveling (i.e., loosening) shoulders.

## **AIR QUALITY**

Olympic National Park is designated as a Class I area as defined by the Clean Air Act, as amended. Class I designation indicates the most stringent requirements for protection of air quality from adverse impacts. Pristine air quality is important to the visitor experience because it allows the long-range scenic views for which Hurricane Ridge Road is known. Air quality is also important in human health and the preservation of natural and cultural resources.

The primary sources for emission of pollutants are located outside Park boundary. The north side of the park is affected by industrial and urban emissions from sources in Port Angeles, although levels of pollutants measured in the Park are lower than those measured in Port Angeles, probably due to distance and topographic shielding (NPS 2003a). Emissions from vehicles traveling in the Park provide only minor contributions to the overall air quality.

The Washington Department of Ecology operates a visibility monitor at Hurricane Ridge during the summer months. Visibility at Hurricane Ridge is most often affected by coastal weather patterns.

## **SOILS**

Soils work at the Park has been entirely lacking, except in conjunction with ecological studies in Olympic National Park. Soils maps for the Olympic Peninsula invariably describe the area within the Park as "rough mountainous land" and make no effort to delineate soil types (NPS 1991, 1999). Soils are derived from erosion of the basaltic and sedimentary rock materials present in the Park. In general, soil layers are thin on the side slopes and mountain tops and thicker in the valleys.

The greatest force at work on the Olympic landscape today is gravity. Gravity moves soil and rock downhill with minor help from water or ice (Tabor 1987). Slow movement is called creep and fast movement is called landslide and rockfall. Creep affects only the surficial soil or unconsolidated material. Landslides usually break away quickly, carrying sliding or flowing material into the valley below, which can be either surficial material or rock.



## VEGETATION

The plant communities surrounding Hurricane Ridge Road are dominated by coniferous forests that change in species composition as one travels the length of the road. At lower elevations along the road (up to 2,000 feet), these forests are dominated by Douglas-fir (*Pseudotsuga menziesii*) and western hemlock (*Tsuga heterophylla*), and also support deciduous species such as red alder (*Alnus rubra*) and bigleaf maple (*Acer macrophyllum*) (NPS 2003, Stewart 1995). Common shrubs include salal (*Gaultheria shallon*), Oregon grape (*Mahonia repens* subsp.), rose (*Rosa* sp.), and salmonberry (*Rubus spectabilis*). Herbaceous plants include swordfern (*Polystichum* sp.), deerfern (*Blechnum spicant*), twinflower (*Linnaea borealis*), and trillium (*Trillium* spp.) (NPS 2003). Where this forest community occurs, roadside vegetation along Hurricane Ridge Road consists of primarily non-native species. Scot's broom (*Cytisus scoparius*) is the most common non-native species that occupies disturbed roadside habitat in the Park, while Robert's geranium (*Geranium robertianum*) is a common non-native plant species in the forest understory in Olympic National Park (NPS 2003). Another non-native, oxeye daisy (*Leucanthemum vulgare*), was also observed along the road during a summer site visit to the project area.

At mid-elevations along Hurricane Ridge Road (2,000 to 3,600 feet), the montane forests are dominated by Pacific silver fir (*Abies amabilis*) and western hemlock. Douglas-fir may occur as a relict from earlier climatic periods, or in drier areas at these elevations. Associated tree species include western red-cedar, mountain hemlock (*Tsuga mertensiana*), and Pacific yew (*Taxus brevifolia*). Common shrubs include salal and Oregon grape; common herbaceous vegetation includes rosy twisted stalk (*Streptopus roseus*), false lily-of-the-valley (*Maianthemum dilatatum*), deerfern, swordfern, and trillium (NPS 2003). Where this forest community occurs along Hurricane Ridge Road, roadside vegetation consists of primarily non-native species.

The tunnels along Hurricane Ridge Road serve as a transition point for vegetation, from the Douglas-fir dominated montane zone to the higher elevation subalpine zone. Forest communities in the subalpine zone are dominated by subalpine fir (*Abies lasiocarpa*). This species, which is found most frequently clustered in groups that dot open, south-facing ridge sides or in dense stands covering large protected areas, is often found in association with mountain hemlock. However, mountain hemlock grows best on cool, moist, north- and east-facing slopes protected from strong winds. Another common conifer, although the least abundant found on Hurricane Ridge in this zone, is the Alaska cedar (*Chamaecyparis nootkatensis*) (NPS 2003, Stewart 1995). Common shrubs include oval-leaf huckleberry (*Vaccinium ovalifolium*), white rhododendron (*Rhododendron albiflorum*), and mountain ash (*Sorbus* sp.). Herbaceous species include beargrass (*Nolina* sp.) and pyrola (*Pyrola* sp.) (NPS 2003). Where this forest community occurs, roadside vegetation consists of mostly native species, however, non-natives do occur.

Common wildflowers that occur on Hurricane Ridge, and could occur along the road, include lanceleaf springbeauty (*Claytonia lanceolata*), American bistort (*Polygonum bistortoides*), broadleaf arnica (*Arnica latifolia*), Indian paintbrush (*Castilleja* sp.), Olympic Mountain aster (*Eucephalus paucicapitatus*), Parry's silene (*Silene parryi*), pearly-everlasting (*Anaphalis margaritacea*), and woolly sunflower (*Eriophyllum* sp.) (Stewart 1995).

At the landscape level, vegetation within the boundaries of Olympic National Park is very well preserved. Outside Park boundaries, vegetation patterns are influenced by the fragmentation and direct loss of vegetation that results from logging (figure 8).

## WILDLIFE

Wildlife in the Park is found along an elevational gradient extending from sea level to glaciers. Associated habitats are diverse and include expansive ocean beaches and rocky intertidal areas, lowland bogs, 11 major inland river systems, extensive tracts of moist-coniferous forest, subalpine meadows, alpine tundra, and glaciers. There are an estimated 61 land mammal, 10 near-shore marine mammal, and 14 offshore mammal species; 301 bird species; 14 amphibian and 6 reptile species; and an unknown number of insect species that frequent the Park (NPS 1999). Discussed below are the mammals, birds, reptiles, and amphibians that may be observed along Hurricane Ridge Road.



### Mammals

The Columbia black-tailed deer (*Odocoileus hemionus columbianus*) is the most common ungulate that occurs along Hurricane Ridge Road. Black bear (*Ursus americanus*) have been observed occasionally by hikers on trails. Omnivorous species that may occur include the raccoon (*Procyon lotor*), the striped skunk (*Mephitis mephitis*), and the introduced red fox (*Vulpes fulva*) (NPS 2003, Stewart 1995). Small mammals commonly observed along Hurricane Ridge Road include the snowshoe hare (*Lepus americanus*), the endemic Olympic marmot (*Marmota olympus*), and the endemic Olympic yellow-pine chipmunk (*Tamias amoenus caurinus*) (NPS 2003).

**FIGURE 8. CONTRAST IN FOREST CONDITIONS WITHIN AND ADJACENT TO THE OLYMPIC NATIONAL PARK BOUNDARY**

## Birds

Although resident birds occur in Olympic National Park, the Park's pristine rivers, lakes, forests, and coastline provide important sources of food, water, and shelter for migratory birds as well. The gray jay (*Perisoreus canadensis*) is probably the most common bird observed along Hurricane Ridge Road. Other birds noted include the songbirds dark-eyed junco (*Junco hyemalis*), black-capped chickadee (*Poecile atricapilla*), and horned lark (*Eremophila alpestris* ssp. *alpina*), as well as the blue grouse (*Dendragapus obscurus*), an upland game bird. The American kestrel (*Falco sparverius*), common raven (*Corvus corvus*), and red-tailed hawk (*Buteo jamaicensis*), as well as the occasional migratory golden eagle (*Aquila chrysaetos*) and bald eagle (*Haliaeetus leucocephalus*) are raptors (i.e., birds of prey) that have been observed along Hurricane Ridge Road (NPS 2003).

## Reptiles and Amphibians

Due to the wet, cold, and cloudy climate of Olympic National Park, only a few reptile species are found. These species include the western fence lizard (*Sceloporus occidentalis*), northern alligator lizard (*Gerrhonotus coeruleus*), rubber boa (*Charina bottae*), common garter snake (*Thamnophis sirtalis*), western terrestrial garter snake (*Thamnophis elegans*), and the northwestern garter snake (*Thamnophis ordinoides*), all of which have the potential to occur along Hurricane Ridge Road.

Amphibians of Olympic National Park include the northwestern salamander (*Ambystoma gracile*), long-toed salamander (*Ambystoma macrodactylum*), the rough-skinned newt (*Taricha granulose*), Oregon salamander (*Ensatina escholtzi*), western red-backed salamander (*Plethodon vehiculum*), red-legged frog (*Rana aurora*), the pacific treefrog (*Pseudacris regilla*), and the introduced bullfrog (*Rana catesbeiana*) (NPS 2003). Although there are no water sources anticipated to support amphibians in the Hurricane Ridge Road project corridor, these species may occur as transients, moving between such water sources in the surrounding forests.

Wildlife is currently affected in the road corridor as a result of human activity. Collisions with wildlife, especially small mammals, occur within the Hurricane Ridge Road corridor and locally affect individuals. Also, human activities associated with feeding wildlife, harassment, and noise cause disturbances to individuals, and in some cases make individuals dependent on humans for food.

## THREATENED AND ENDANGERED SPECIES AND SPECIES OF SPECIAL CONCERN

Under the Endangered Species Act of 1973, as amended, an endangered species is defined as any species in danger of extinction throughout all or a significant portion of its range. No federally endangered species occur in the Hurricane Ridge Road corridor. A threatened species is defined as any species likely to become an endangered species in the foreseeable future throughout all or a significant portion of its range.

The U.S. Fish and Wildlife Service is responsible for providing other federal agencies with a list of endangered or threatened species, or species of concern, that may be affected by a proposed federal action (USFWS 2002a). The species in appendix A were identified by the U.S. Fish and Wildlife Service as potentially occurring in Clallam County, Washington (USFWS 2002a). Appendix B provides a detailed biological assessment that describes and considers impacts to threatened, endangered, and special-concern species with the potential to occur in the Hurricane Ridge Road corridor. The species considered in detail include the Northern spotted owl (*Strix occidentalis caurina*), marbled murrelet (*Brachyramphus marmoratus*), and the bald eagle (*Haliaeetus leucocephalus*). The Northern spotted owl, marbled murrelet, and bald eagle are all federally threatened species that occupy habitat in (owl, murrelet), or pass through (eagle), the project area. The Northern spotted owl is listed by the state of Washington as endangered, while the bald eagle and marbled murrelet are listed as threatened by the state (WDF&W 2003).

The following is a summary of the surveys for these species in the Hurricane Ridge Road corridor (please refer to the biological assessment included in appendix B for more detailed information regarding habitat requirements and survey results).

### **Northern Spotted Owl**

Although structurally suitable habitat for Northern spotted owls is found in immediate proximity along the entire length of Hurricane Ridge Road, ongoing Park surveys indicated that much of this habitat is no longer used for nesting by Northern spotted owls. As indicated by the surveys, all habitat below the tunnels is used for nesting by barred owls (*Strix varia*), with only an occasional dispersing, non-nesting Northern spotted owl using areas above the road (Gremel 2003). No barred owls have ever been located at the two Northern spotted owl survey sites above the tunnels. These are very “solid” Northern spotted owl nesting sites that generally support nesting activity in any year that it occurs.

### **Marbled Murrelet**

High quality marbled murrelet nesting habitat is found straddling Hurricane Ridge Road from just below the Heart O’ the Hills entrance station up to the tunnels. Forested areas below the entrance station are not suitable because of the human disturbance history and the narrow nature of Park lands in this strip. Above the tunnels, a few small pockets of lower quality habitat occur; however, as elevation increases, the trees become smaller with smaller limbs (Hall 2003).

### **Bald Eagle**

Ninety-nine percent of all bald eagle nests in the state of Washington are located within one mile of a lake, river, or marine shoreline, and bald eagle foraging is usually associated with large, open expanses of water (Stinson et al. 2001). No bald eagle nests or wintering concentrations are known along Hurricane Ridge Road. Individual bald eagles are occasionally seen; however, the project area is not near a suitable water body, a habitat

condition commonly used by bald eagles in Washington. Therefore, the Hurricane Ridge Road corridor is not considered suitable for bald eagle use.

## **VISITOR EXPERIENCE**

### **Hurricane Ridge Road**

Approximately 4.8 miles from the start of Hurricane Ridge Road is the Heart O' the Hills entrance station, where fees are collected on weekends during the winter and every day during the summer. During the months of December through April, depending on the weather, a winter schedule is implemented and Hurricane Ridge Road is closed Monday through Thursday. Depending on weather conditions and/or road maintenance requirements, this winter schedule may be extended to include the month of November to allow for continued winter operations (e.g., plowing) and road maintenance.

Between Heart O' the Hills entrance station and the Hurricane Ridge Visitor Center, Hurricane Ridge Road is a steady but gentle climb into the foothills, with rugged Klahhane Ridge rising in the foreground (Stewart 1995). There are many formal paved and informal gravel turnouts and scenic resources along the road that provide opportunities for visitors to get out of their cars and enjoy Olympic National Park. These turnouts provide panoramic views of Sequim Valley, the Strait of Juan de Fuca, Dungeness Spit, the San Juan Islands, Vancouver Island, Mount Baker (10,778 feet; located 90 miles to the northeast near the Canadian border), Morse Creek Valley, Elk Ridge, Blue Mountain, and Glacier Peak (10,541 feet; in the Cascade Mountains). Visitors can also view pillow lava (basalt formed by rapid cooling of molten lava flowing out beneath the sea) and avalanche chutes. There is also a trail off the road that switchbacks up the side of Klahhane Ridge to its top (NPS 1996). On the weekends and some holidays during the winter schedule, visitors can access the Hurricane Ridge winter use area for downhill and cross-country skiing.

Hurricane Ridge Road average daily traffic counts vary depending on the segment of the road. The average daily traffic count for the intersection with Mount Angeles Road is 930 vehicles. The average daily traffic count for the segment below the entrance station is 530 vehicles, including vehicles destined for the Lake Dawn residences. The average daily traffic count for vehicles through the Heart O' The Hills entrance station is 400. There are an estimated 10 accidents annually on Hurricane Ridge Road. Bicyclists also use Hurricane Ridge Road, although a count of bicyclists using the road on a daily basis is not available. The road has narrow shoulders in some sections and bicyclists typically ride on the edge of the road in these sections.

## **PARK OPERATIONS**

Along Hurricane Ridge Road itself, road work and maintenance, including plowing, culvert and ditch maintenance, patching, striping, and shoulder work (e.g., vegetation and rock clearing), are common Park operations, as well as pavement repair in landslide areas.

## **SOCIOECONOMIC ENVIRONMENT**

Olympic National Park hosted 3.3 million recreation visits in 2000. Park visitors spent \$90 million dollars in the local area, generating \$29 million in direct personal income (wages and salaries) for local residents and supporting 1,900 jobs in area tourism businesses. Tourism accounts for approximately 10% of area employment and park visitors account for 62% of tourism spending in Clallam and Jefferson Counties and 28% in the four county region that includes Gray's Harbor and Mason Counties (Stynes et al. 2001).

Forestry and wood products sectors are the principal base of the area, accounting for 23% of output, 10% of jobs, and 16% of value added (including personal income, profits and rents, and sales taxes) in the four county area. Tourism accounts for approximately 7% to 10% of the jobs in the region and 3% to 5% of the overall output. Construction related work accounts for approximately 8% of the jobs and 7% of the output.

## ENVIRONMENTAL CONSEQUENCES

### INTRODUCTION

This section describes the environmental consequences associated with the alternatives. It is organized by impact topics that distill the issues and concerns into distinct topics for discussion analysis. These topics focus on the presentation of the environmental consequences and allow a standardized comparison between alternatives based on the most relevant topics. NEPA requires consideration of context, intensity, and duration of impacts, direct or indirect impacts, cumulative impacts, and measures to mitigate for impacts. National Park Service policy also requires that impairment of resources be evaluated in all environmental documents.

### METHODOLOGY

Overall, the National Park Service based these impact analyses and conclusions on the review of existing literature and Olympic National Park studies; information provided by experts at the Park and in other agencies; professional judgments and Park staff insights; input from interested local American Indian tribes; and public input. The methods are described only for those resource topics carried forward in the environmental consequences discussion and are presented in the following order:

- *Natural Resources* – Air Quality, Soils, Vegetation, Wildlife, Threatened and Endangered Species, and Species of Special Concern
- *Social Resources* – Visitor Experience, Park Operations, and Socioeconomic Environment

### Context, Duration, Intensity, and Type of Impact

#### General Definitions

The following definitions were used to evaluate the context, intensity, duration, and cumulative nature of impacts associated with the project alternatives.

#### Context

Context is the setting within which an impact is analyzed such as local, parkwide, or regional. The Council on Environmental Quality requires that impact analyses include discussions of context.

## Impact Intensity

Impact intensity is the degree to which a resource would be beneficially or adversely affected. The criteria that were used to rate the intensity of the impacts for each resource topic are presented later in this section under each resource topic heading.

## Type of Impact

Impacts can be beneficial or adverse. Beneficial impacts would improve resource conditions while adverse impacts would deplete or negatively alter resources.

## Duration

Duration of an impact is analyzed independently for each resource area because impact duration is dependent on the resource being analyzed. Depending on the resource, impacts may last as long as construction takes place, or a single year or growing season, or longer. For purposes of analysis, impact duration is measured as short and long term as well as permanent.

## Direct versus Indirect Impacts

The following definitions of direct and indirect impacts are considered:

- *Direct*— an effect that is caused by an action and occurs at the same time and in the same place
- *Indirect*— an effect that is caused by an action that is later in time or farther removed in distance, but is still reasonably foreseeable

## Impact Descriptions

Potential impacts are described in terms of type (are the effects beneficial or adverse?), context (are the impacts site-specific, local, or even regional?), duration (are the effects short term, long term, or permanent?), intensity (are the effects negligible, minor, moderate, or major?), and impairment (would the effects constitute impairment of Park resources and/or values?). Because definitions of duration (short term, long term, or permanent) and intensity (negligible, minor, moderate, or major) vary by resource, they are provided separately for each impact topic analyzed in this environmental assessment.

## AIR QUALITY

The 1963 Clean Air Act, as amended (42 USC 7401 *et seq.*), requires land managers to protect air quality. Section 118 of the Clean Air Act requires national parks to meet all federal, state, and local air pollution standards. *NPS Management Policies* address the need to analyze



potential impacts to air quality during park planning. In order to assess the magnitude of air quality impacts under the various alternatives, air quality standards governing the Park were examined and compared to expected changes due to construction activities. The thresholds of change that define the impact intensities are discussed below.

<b>Impact Intensity</b>	<b>Intensity Definition</b>
Negligible	Impacts (chemical, physical or biological) would not be detectable, would be well below air quality standards or criteria, and would be within historical or desired air quality conditions.
Minor	Impacts (chemical, physical, or biological effects) would be detectable, but would be below air quality standards or criteria and within historical or desired air quality conditions.
Moderate	Impacts (chemical, physical, or biological effects) would be detectable, but would be at or below air quality standards or criteria; however, historical baseline or air quality standards would be infrequently and not continuously, exceeded by a small amount.
Major	Impacts (chemical, physical, or biological effects) would be detectable and would be frequently altered from the historical baseline or desired air quality conditions; and/or air quality standards or criteria would be frequently and/or continuously exceeded.

The duration of air quality impacts is considered short term if the impacts last only during construction activities and long term if the impacts last longer than the construction period.

## SOILS

All available information on soils potentially impacted in various areas of the Park was compiled. Predictions about short- and long-term site impacts were based on previous projects with similar soils and recent studies. The thresholds of change for the intensity of an impact to soils are defined as follows:

<b>Impact Intensity</b>	<b>Intensity Description</b>
<b>Negligible</b>	Soils would not be affected or the effects to soils would be below or at the lower levels of detection. Any effects to soils would be slight, and no long-term effects to soils would occur.
<b>Minor</b>	The effects to soils would be detectable, but in a small area. Mitigation may be needed to offset adverse effects and would be relatively simple to implement and likely be successful.
<b>Moderate</b>	The effect on soils would be readily apparent, likely long term, and result in a change to the soil character over a relatively wide area. Mitigation measures would be necessary to offset adverse effects and likely be successful.
<b>Major</b>	The effect on soils would readily be apparent, long term, and substantially change the character of the soil over a large area in and outside the Park. Mitigation measures to offset adverse effects would be needed, extensive, and their success could not be guaranteed.

Soils impacts would be considered short term if the soils recovered in less than 3 years. Soil impacts would be considered long term if the soils take more than 3 years to recover.

## VEGETATION

All available information on vegetation and vegetative communities potentially impacted in the Park project area was compiled. Where possible, map locations of sensitive vegetation species, populations, and communities were identified and avoided. Predictions about short- and long-term site impacts were based on previous projects with similar vegetation and recent studies. The thresholds of change for the intensity of an impact are defined as follows:

Impact Intensity	Intensity Description
<b>Negligible</b>	No native vegetation would be affected or some individual native plants could be affected as a result of the alternative, but there would be no effect on native species populations. The effects would be on a small scale, and no species of special concern would be affected.
<b>Minor</b>	The alternative would affect some individual native plants and would also affect a relatively minor portion of that species' population. Mitigation to offset adverse effects, including special measures to avoid affecting species of special concern, could be required and would be effective.
<b>Moderate</b>	The alternative would affect some individual native plants and would also affect a sizable segment of the species' population over a relatively large area. Mitigation to offset adverse effects could be extensive, but would likely be successful. Some species of special concern could also be affected.
<b>Major</b>	The alternative would have a considerable effect on native plant populations, including species of special concern, and affect a relatively large area in and out of the Park. Mitigation measures to offset the adverse effects would be required, extensive, and success of the mitigation measures would not be guaranteed.

Vegetation impacts would be considered short term if the vegetation recovered in less than 3 years. Vegetation impacts would be considered long term if the vegetation takes more than 3 years to recover.

## WILDLIFE

The National Park Service Organic Act, which directs parks to conserve wildlife unimpaired for future generations, is interpreted by the agency to mean that native wildlife should be protected and perpetuated as part of the Park's natural ecosystem. Natural processes are relied on to control populations of native species to the greatest extent possible; otherwise they are protected from harvest, harassment, or harm by human activities. According to *NPS 2001 Management Policies*, the restoration of native species is a high priority (sec. 4.1). Management goals for wildlife include maintaining components and processes of naturally evolving Park ecosystems including natural abundance, diversity, and the ecological integrity of plants and animals. Information on Olympic National Park wildlife was taken from Park documents and records. Park natural resource management staff, the U.S. Fish and Wildlife Service, and the Washington Department of Natural Resources also provided wildlife information. The thresholds of change for the intensity of an impact to wildlife are defined as follows:

Impact Intensity	Intensity Description
<b>Negligible</b>	There would be no observable or measurable impacts to native species, their habitats, or the natural processes sustaining them. Impacts would be of short duration and well within natural fluctuations.
<b>Minor</b>	Impacts would be detectable, but they would not be expected to be outside the natural range of variability and would not be expected to have any long-term effects on native species, their habitats, or the natural processes sustaining them.
<b>Moderate</b>	Breeding animals of concern are present; animals are present during particularly vulnerable life stages such as migration or juvenile stages; mortality or interference with activities necessary for survival can be expected on an occasional basis, but is not expected to threaten the continued existence of the species in the Park. Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and they could be outside the natural range of variability for short periods of time. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.
<b>Major</b>	Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, and they would be expected to be outside the natural range of variability for long periods of time or permanently. Loss of habitat might affect the viability of at least some native species. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.

Impacts would be considered short term if the wildlife recovered in less than one year.

Impacts would be considered long term if wildlife recovery takes more than one year.

## THREATENED AND ENDANGERED SPECIES AND SPECIES OF CONCERN

The Endangered Species Act of 1973 (16 USC 1531 *et seq.*), as amended, mandates that all federal agencies consider the potential effects of their actions on species listed as threatened or endangered. If the National Park Service determines that an action may adversely affect a federally listed species, consultation with the U.S. Fish and Wildlife Service is required to ensure that the action would not jeopardize the species' continued existence or result in the destruction or adverse modification of critical habitat. *NPS 2001 Management Policies* state that potential effects of agency actions would also be considered for state or locally listed species.

The National Park Service is required to control access to critical habitat of such species and to perpetuate the natural distribution and abundance of these species and the ecosystems upon which they depend. The U.S. Fish and Wildlife Service was contacted for a list of special-status species and designated critical habitats that may be within the project area or affected by any of the alternatives (see appendix A for the U.S. Fish and Wildlife Service list). Information on possible threatened, endangered, and candidate species, as well as species of special concern, was gathered from Washington Natural Heritage Program, NatureServe, and the U.S. Fish and Wildlife Service, among others. Map locations of habitat associated with possible threatened, endangered, and candidate species, as well as species of special concern, were compared with locations of proposed activities. Known impacts caused by development and human use were also considered. The thresholds of change for the intensity of an impact are defined as follows:

Impact Intensity	Intensity Definition
Negligible	The action could result in a change to a population or individuals of a species, but the change would be so small that it would not be of any measurable or perceptible consequence and would be well within natural variability. This impact intensity equates to a U.S. Fish and Wildlife Service “may affect, not likely to adversely affect” determination.
Minor	The action could result in a change to a population or individuals of a species. The change would be measurable, but small and localized and not outside the range of natural variability. Mitigation measures, if needed to offset the adverse effects, would be simple and successful. This impact intensity equates to a U.S. Fish and Wildlife Service “may affect, not likely to adversely affect” determination.
Moderate	Impacts on special-status species, their habitats, or the natural processes sustaining them would be detectable and occur over a large area. Breeding animals of concern are present; animals are present during particularly vulnerable life-stages such as migration or juvenile stages; mortality or interference with activities necessary for survival can be expected on an occasional basis, but is not expected to threaten the continued existence of the species in the Park unit. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful. This impact intensity equates to a U.S. Fish and Wildlife Service “may affect, likely to adversely affect” determination.
Major	The action would result in a noticeable effect to viability of a population or individuals of a species or resource. Impacts on a special-status species or the natural processes sustaining them would be detectable, both in and out of the Park. Loss of habitat might affect the viability of at least some special-status species. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed. This impact intensity equates to a U.S. Fish and Wildlife Service “may affect, likely to jeopardize the continued existence of a species or adversely modify critical habitat for a species” determination.

Impacts would be considered short term if the species recovered in less than one year.  
Impacts would be considered long term if the species takes more than one year to recover.

## VISITOR EXPERIENCE

*NPS 2001 Management Policies* state that the enjoyment of Park resources and values by the people of the United States is part of the fundamental purpose of all parks and that the National Park Service is committed to providing appropriate, high-quality opportunities for people to enjoy the parks. Part of the purpose of Olympic National Park is to offer opportunities for recreation, education, inspiration, and enjoyment. Consequently, one of the Park’s management goals is to ensure that visitors safely enjoy and are satisfied with the availability, accessibility, diversity, and quality of Park facilities, services, and appropriate recreational opportunities.

Public scoping input and observation of visitation patterns, combined with an assessment of what is available to visitors under current management, were used to estimate the effects of the actions in the various alternatives of this document. The impact on the ability of the visitor to experience a full range of Olympic National Park resources was analyzed by examining resources and objectives presented in the Park significance statement. The potential for change in visitor use and experience proposed by the alternatives was evaluated by identifying projected increases or decreases in use of Hurricane Ridge Road and other

visitor uses, and determining how these projected changes would affect the desired visitor experience and to what degree and for how long. The thresholds of change for the intensity of an impact to visitor experience are defined as follows:

<b>Impact Intensity</b>	<b>Intensity Description</b>
<b>Negligible</b>	Visitors would not be affected, or changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the effects associated with each alternative.
<b>Minor</b>	Changes in visitor use and/or experience would be detectable, although the changes would be slight. The visitor would be aware of the effects associated with the alternative, but the effects would be slight.
<b>Moderate</b>	Changes in visitor use and/or experience would be readily apparent. The visitor would be aware of the effects associated with the alternative and would likely be able to express an opinion about the changes.
<b>Major</b>	Changes in visitor use and/or experience would be readily apparent, severely adverse, or exceptionally beneficial, and have important long-term consequences. The visitor would be aware of the effects associated with the alternative and would likely express a strong opinion about the changes.

Visitor experience impacts would be considered short term if the effects last for the duration of the treatment action. Visitor use impacts would be considered long term if the effects last longer than the duration of the treatment action.

## PARK OPERATIONS

Park operations, for the purpose of this analysis, refers to the quality and effectiveness of Hurricane Ridge Road and the Park's ability to maintain the road in order to adequately protect and preserve vital resources and provide for an effective visitor experience. This includes an analysis of the condition and usefulness of the road's associated facilities such as turnouts, parking areas, road intersections, and safety features such as guardrails.

Park staff knowledgeable of these issues were members of the planning team that evaluated the impacts of each alternative. Impact analysis is based on the current description of Park operations presented in the "Affected Environment" section of this document. The thresholds of change for the intensity of an impact to Park operations are defined as follows:

<b>Impact Intensity</b>	<b>Intensity Description</b>
<b>Negligible</b>	Park operations would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on Park operations.
<b>Minor</b>	The effect would be detectable and likely short term, but would be of a magnitude that would not have an appreciable effect on Park operations. If mitigation was needed to offset adverse effects, it would be simple and likely successful.
<b>Moderate</b>	The effects would be readily apparent, likely long term, and would result in a substantial change in Park operations in a manner noticeable to staff and to the public. Mitigation measures would be necessary to offset adverse effects and would likely be successful.
<b>Major</b>	The effects would be readily apparent, long term, would result in a substantial change in Park operations in a manner noticeable to staff and the public and be markedly different

Impact Intensity	Intensity Description
	from existing operations. Mitigation measures to offset adverse effects would be needed, would be extensive, and their success could not be guaranteed.

Park operations impacts would be considered short term if the effects last for the duration of the treatment action. Park operations impacts would be considered long term if the effects last longer than the duration of the treatment action.

## SOCIOECONOMIC ENVIRONMENT

Issues were identified through the scoping process, and included concerns with socioeconomic effects on adjacent landowners and nearby towns or agencies as a result of the no-action and preferred alternatives. The thresholds of change that define the impact intensities for socioeconomic impacts are as follows.

Impact Intensity	Intensity Definition
Negligible	No effects would occur or the effects to socioeconomic conditions would be below or at the level of detection. The effect would be slight and no long-term effects to socioeconomic conditions would occur.
Minor	The effects to socioeconomic conditions would be detectable, although short term. Any effects would be small, and if mitigation were needed to offset potential adverse effects, it would be simple and successful.
Moderate	The effects to socioeconomic conditions would be readily apparent and likely long term. Any effects would result in changes to socioeconomic conditions on a local scale. If mitigation is needed to offset potential adverse effects, it could be extensive, but would likely be successful.
Major	The effects to socioeconomic conditions would be readily apparent, long term, and would cause substantial changes to socioeconomic conditions in the region. Mitigation measures to offset potential adverse effects would be extensive and their success could not be guaranteed.

The duration of socioeconomic impacts is considered short term if the impacts last only through construction activities and long term if the impacts last longer than the construction period.

## CUMULATIVE EFFECTS

Effects can be direct, indirect, or cumulative. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later or farther away, but are still reasonably foreseeable. Cumulative effects are the impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such action. Cumulative effects can result from individually minor, but collectively significant, actions taking place over a period of time.

The Council on Environmental Quality regulations, which implement NEPA, require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined 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 nonfederal) or person undertakes such other actions (40 CFR 1508.7).

Cumulative impacts were determined by combining the impacts of the alternative with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable projects at Olympic National Park and, as applicable, in the surrounding region. Cumulative impacts are considered for all alternatives and are presented at the end of each impact topic discussion analysis.

### **Projects that Make Up the Cumulative Impact Scenario**

To determine potential cumulative impacts, projects in the area surrounding Olympic National Park were identified. The area included Port Angeles and nearby lands administered by the U.S. Forest Service and the state of Washington. Projects were determined by meetings and telephone calls with county and town governments and state land managers. Potential projects identified as cumulative actions included any planning or development activity that had occurred in the past, was currently being implemented, or that would be implemented in the reasonably foreseeable future.

These cumulative actions are evaluated in the cumulative impact analysis in conjunction with the impacts of each alternative to determine if they would have any additive effects on a particular natural resource, Park operation, or visitor use. Because some of these cumulative actions are in the early planning stages, the evaluation of cumulative effects was based on a general description of the project.

### **Past Actions**

Past actions that could contribute to cumulative effects include:

- Hurricane Ridge Road Geotechnical Exploration – this project involved the use of a drill rig to bore 35, 5-foot-deep holes (4-inches in diameter) every 0.5 mile along the entire length of Hurricane Ridge Road. Each hole was anticipated to take an average of one hour, with actual drilling time estimated to average 0.5 hour per hole. An additional aspect of this project required drilling two, 50-foot-deep holes (4-inches in diameter) in slide areas along Hurricane Ridge Road. Drilling these two holes was estimated to take two days for each, with the drill unit running most of that time.
- Development in the Port Angeles area and logging on adjacent lands managed by local, state, and federal agencies, as well as private citizens.

## Current and Future Actions

Current actions and those projected for the future could also contribute to cumulative effects. These include:

- Hurricane Ridge Visitor Center Parking Area Improvements – this project involves replacing deteriorated sidewalks and curbing at the visitor center.
- Logging and development on adjacent lands managed by local, state, and federal agencies, as well as private citizens.
- Ongoing Park maintenance operations on Hurricane Ridge Road including winter snow plowing activities and other routine maintenance.

## IMPAIRMENT OF OLYMPIC NATIONAL PARK RESOURCES OR VALUES

In addition to determining the environmental consequences of the preferred and no-action alternatives, the *NPS 2001 Management Policies* and Director’s Order – 12 require analysis of potential effects to determine if actions would impair Olympic National Park resources.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or minimize to the greatest degree practicable, adverse impacts on park and monument resources and values. However, the laws do give National Park Service management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service management discretion to allow certain impacts within parks, that discretion is limited by statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may constitute impairment. However, an impact would more likely constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Park
- key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park
- identified as a goal in the *Olympic National Park General Management Plan* or other relevant National Park Service planning documents

Impairment may result from National Park Service activities in managing the Park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the Park. In this “Environmental Consequences” section, a determination on impairment is made



in the conclusion statement of the appropriate impact topics for each alternative. The National Park Service does not analyze recreational values / visitor experience (unless impacts are resource based), socioeconomic values, or Park operations for impairment.

## **ENVIRONMENTAL CONSEQUENCES — ALTERNATIVE 1: NO ACTION**

### **Air Quality**

No action would be taken in this alternative and, therefore, there would be no impact to air quality.

**Cumulative Impacts.** Air quality in the area is impacted over the long term by past, present, and reasonably foreseeable logging and development in the Port Angeles area. This is the primary source of air pollutants for the north side of the Park. Construction projects inside and outside of the Park including road maintenance and repair and the Hurricane Ridge Visitor Center parking area improvements provide short-term impacts during the length of the construction projects. The cumulative effects of these past, present, and reasonably foreseeable future actions would have short-term, negligible, adverse impacts from construction activities and long-term, minor to moderate, adverse impacts on air quality from logging and development activities outside the Park. Because this alternative would not affect air quality, it would not contribute to cumulative impacts on air quality resources.

**Conclusion.** There would be no new impacts to air quality under this alternative. The cumulative effects of these past, present, and reasonably foreseeable future actions would have short-term, negligible, adverse impacts from construction activities and long-term, minor to moderate, adverse impacts on air quality from logging and development activities outside the Park. Because this alternative would not affect air quality, it would not contribute to cumulative impacts on air quality resources.

**Impairment.** Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill the specific purposes identified in the Park's establishing legislation, (2) key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park, or (3) identified as a goal in the Park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of air quality.

### **Soils**

No action would be taken in this alternative and, therefore, there would be no impact to soils.

Erosion associated with landslides and other areas of instability would require continual monitoring and control to prevent the loss of soil.

**Cumulative Impacts.** Soils in the area are impacted by past, present, and reasonably foreseeable logging and development such as roads, buildings, landscaping, and utility lines

on federal, tribal, state, and private lands. Soils are excavated and replaced, buried beneath concrete, and eroded. The cumulative effects of these past, present, and reasonably foreseeable future actions would have short- and long-term, minor to moderate, adverse impacts on soils. Because this alternative would not affect soils, it would not contribute to cumulative impacts on soil resources.

**Conclusion.** There would be no new impacts to soils under this alternative. The cumulative effects of past, present, and reasonably foreseeable future actions would have short- and long-term, minor to moderate, adverse impacts on soils. Because the no-action alternative would not affect soils, it would not contribute to cumulative impacts on soil resources.

**Impairment.** Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill the specific purposes identified in the Park's establishing legislation, (2) key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park, or (3) identified as a goal in the Park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of soils.

## Vegetation

Under the no-action alternative, there would be no new ground-disturbing activities with the potential to affect vegetation. Ongoing road maintenance such as ditch, culvert, and shoulder work (e.g., vegetation and rock clearing) could adversely affect vegetation, and such effects would be long term, localized, and negligible. There would be no changes in the current status of vegetative communities, either in terms of species composition or population dynamics, other than those brought about by natural environmental processes (e.g., landslides).

**Cumulative Impacts.** Logging and development have had and will continue to have adverse effects on vegetation of the Olympic Peninsula. Construction and use of roads, trails, utility lines, landscaping, and other development results in long-term disturbance and destruction of vegetation. Non-native species are being imported to the area, both accidentally and intentionally (for landscaping). The cumulative effects of these past, present, and reasonably foreseeable future actions would have long-term, minor, adverse impacts on vegetation. When viewed with past, present, and reasonably foreseeable future actions, there would be negligible cumulative contributions from the no-action alternative and cumulative impacts to vegetation would be long term, negligible to minor, and adverse.

**Conclusion.** Under the no-action alternative, there would be no new ground-disturbing activities with the potential to affect vegetation. Ongoing road maintenance such as ditch, culvert, and shoulder work (e.g., vegetation and rock clearing) could adversely affect vegetation, and such effects would be long term, localized, and negligible. The cumulative effects of past, present, and reasonably foreseeable future actions would have long-term, minor, adverse impacts on vegetation. The no-action alternative would provide negligible contributions to cumulative impacts.

**Impairment.** Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill the specific purposes identified in the Park's establishing legislation, (2) key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park, or (3) identified as a goal in the Park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of vegetation.

## **Wildlife**

There would be no new impacts or changes to impacts to wildlife under the no-action alternative. Impacts to wildlife from collisions with automobiles, as well as disturbances associated with human activities in the parking areas, turnouts, and visitor center (e.g., feeding, harassment, noise) would continue, having long-term, localized, negligible, adverse effects. There would be no changes in the current status of biotic communities, either in terms of species composition or population dynamics, other than those brought about by natural environmental processes.

**Cumulative Impacts.** Wildlife in the area are impacted by noise, human presence, and habitat fragmentation associated with logging and development such as roads, buildings, trails, landscaping, and utility lines on adjacent federal, tribal, state, and private lands. The geotechnical investigation and visitor center parking area projects contributed to these impacts with additional noise and human presence. However, the visitor center parking area is already a high human-use area, and activities associated with sidewalk and curb replacement provided only negligible impacts. The drilling activities provided a different type of noise than normal automobile traffic, but these noises were short term and localized. The cumulative effects of these past, present, and reasonably foreseeable future actions would have short- and long-term, negligible to minor, adverse impacts on wildlife. This alternative would not affect wildlife beyond the localized, negligible, adverse impacts associated with visitor use and automobile traffic, there would be only negligible cumulative contributions from the no-action alternative and the cumulative effects would be short and long term, negligible to minor, and adverse.

**Conclusion.** There would be no new impacts, or changes to impacts, to wildlife under the no-action alternative. Impacts to wildlife from collisions with automobiles, as well as disturbances associated with human activities in the parking areas, turnouts, and visitor center (e.g., feeding, harassment, noise) would continue, having long-term, localized, negligible, adverse effects. The cumulative effects of past, present, and reasonably foreseeable future actions would have short- and long-term, negligible to minor, adverse impacts on wildlife. Because this alternative would not affect wildlife beyond the localized, negligible, adverse impacts associated with visitor use and automobile traffic, there would be only negligible contributions from the no-action alternative and the cumulative effects would be short and long term, negligible to minor, and adverse.

**Impairment.** Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill the specific purposes identified in the Park's establishing legislation, (2) key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park, or (3) identified as a goal in the Park's *General*

*Management Plan* or other relevant National Park Service planning documents, there would be no impairment of wildlife.

### **Threatened and Endangered Species and Species of Special Concern**

Under the no-action alternative, there would be no new activities that have the potential to change the current status of listed species (e.g., the Northern spotted owl, marbled murrelet, and/or bald eagle) known to occur in or pass through the Hurricane Ridge Road corridor. There would be no new ground-disturbing activities with the potential to impact individuals or suitable habitat for these species. Disturbances associated with traffic noise (e.g., displacement or disruption) would continue to be inconsequential.

**Cumulative Impacts.** Threatened, endangered, and special-status species, specifically the Northern spotted owl and marbled murrelet, in the area are impacted by noise, human presence, and habitat fragmentation associated with logging and development such as roads, buildings, trails, landscaping, and utility lines on federal, tribal, state, and private lands. The geotechnical investigation and visitor center parking area projects also contributed to these impacts, although additional activity in the visitor center parking area was inconsequential, based on current levels of human presence in this area, and only affected marbled murrelets (Northern spotted owls do not occur in the vicinity). Geotechnical drilling provided a different type of noise and human activity disturbance than routine automotive traffic. The cumulative effects of these past, present, and reasonably foreseeable future actions would have short- and long-term, moderate, adverse impacts on threatened, endangered, or special-status species. Because the no-action alternative would have inconsequential effects on threatened, endangered, or special-status species, there would be no contribution and overall cumulative effects would be short and long term, moderate, and adverse.

**Conclusion.** There would be no new impacts, or changes to impacts, to threatened, endangered, or special-status species under the no-action alternative. Disturbances associated with traffic noise would continue to be inconsequential. The cumulative effects of past, present, and reasonably foreseeable future actions would have short- and long-term, moderate, adverse impacts on threatened, endangered, or special-status species. Because the no-action alternative would have inconsequential effects on threatened, endangered, or special-status species, there would be no contribution to cumulative effects.

**Impairment.** Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill the specific purposes identified in the Park's establishing legislation, (2) key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park, or (3) identified as a goal in the Park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of threatened, endangered, or sensitive species.

### **Visitor Experience**

There would be no road improvements and associated improvements to visitor experience with the no-action alternative. Currently, non-local visitors that drive to the Park often miss

Hurricane Ridge Road because the intersection with Mount Angeles Road is confusing. Vehicles, including large recreational vehicles, drive into residential neighborhoods and some have difficulty turning around. Visitors that drive, and those on bicycles, on Hurricane Ridge Road also experience deteriorated road conditions. Under the no-action alternative, cracking of the road surface would be remedied through patching, while the road shoulders would continue to deteriorate despite ongoing maintenance. Bicyclists also experience narrow shoulders for portions of the road, often forcing them to share the roadway with motorized vehicles. The no-action alternative would not change this situation. The intersection of Mount Angeles Road with Hurricane Ridge Road could be improved with a change in signage, but the improvements would not stop all of the vehicles from taking the wrong turn. The existing condition constitutes a short- and long-term, negligible to minor, adverse impact to visitor experience. In the event that landslide movement increases, the increased road and parking area damage would cause temporary closures or reduction in traffic or parking spaces during more extensive repairs. Increased landslide movement would result in short-term, minor to moderate, adverse impacts to visitor experience.

**Cumulative Impacts.** The Hurricane Ridge Visitor Center parking area project, as well as the geotechnical investigation of Hurricane Ridge Road, affected visitor experience from traffic delays associated with drilling and the presence of heavy equipment on the road and in the visitor center parking area. Past, present, and reasonably foreseeable future logging and development outside Park boundaries would have no effect on visitor experience for Hurricane Ridge. The cumulative effects of the Hurricane Ridge Visitor Center parking area project, ongoing road maintenance, and the geotechnical drilling result in short-term, negligible to minor, adverse impacts on visitor experience. The no-action alternative would have short-term, negligible to minor, adverse contributions to cumulative effects on visitor experience. In the event that landslide movement increases, contributions to cumulative effects on visitor experience from the no-action alternative would be short term, minor to moderate, and adverse. Therefore, cumulative effects of the past, present, and reasonably foreseeable future actions, in conjunction with the no-action alternative, would be negligible to moderate and adverse in the short term, as well as negligible to minor and adverse in the long term.

**Conclusion.** The existing condition on Hurricane Ridge Road constitutes a short- and long-term, negligible to minor, adverse impact to visitor experience. Increased landslide movement would result in short-term, minor to moderate, adverse impacts to visitor experience. The cumulative effects of the Hurricane Ridge Visitor Center parking area project and the geotechnical drilling, in conjunction with the no-action alternative, would have short-term, negligible to minor, adverse impacts on visitor experience. In the event landslide movement increases, cumulative effects to visitor experience from past, present, and reasonably foreseeable future actions, including the no-action alternative, would be short term, minor to moderate, and adverse.

## **Park Operations**

Although routine maintenance would continue, this alternative would not appreciably extend the life of the road, and the road would eventually deteriorate beyond the capabilities of Park maintenance staff for repair. Park staff would continue to address issues with

Hurricane Ridge Road using present practices under the no-action alternative. These include road work and maintenance such as culvert and ditch maintenance, patching, striping, and shoulder work (e.g., vegetation and rock clearing). In addition, ongoing monitoring and repair of those sections of road where landslides have caused damage would continue, with the potential that more significant movement would cause temporary disruptions to traffic flow and require the attention of Park maintenance staff. There would be no changes to Park operations related to Hurricane Ridge Road. Funds would be saved with no reconstruction; however, this eventually would be negated by increased maintenance costs as the road continues to deteriorate. The existing conditions constitute a long-term, negligible, adverse impact to Park operations. Should landslide movement increase, there would be short-term, localized, minor to moderate, adverse impacts on Park operations.

**Cumulative Impacts.** The Hurricane Ridge Visitor Center parking area project, as well as the geotechnical investigation of Hurricane Ridge Road, required Park staff to provide contractor oversight for the duration of these activities, decreasing their availability for other Park operations. The cumulative effects of these past, present, and reasonably foreseeable future actions result in long-term, negligible, adverse impacts on Park operations. Because the no-action alternative would also constitute a long-term, negligible, adverse impact, the overall cumulative impacts to Park operations would be short and long term, negligible, and adverse. Should landslide movement increase, there would be short-term, localized, minor to moderate, adverse impacts on Park operations that would contribute to cumulative effects. In the event landslide movement increases, cumulative effects from past, present, and reasonably foreseeable future actions, including the no-action alternative, would be short term, minor to moderate, and adverse, as well as long term, negligible, and adverse.

**Conclusion.** There would be no changes to Park operations related to Hurricane Ridge Road. The existing condition constitutes a long-term, negligible, adverse impact to Park operations. Should landslide movement increase, there would be short-term, minor to moderate impacts on Park operations. The cumulative effects of past, present, and reasonably foreseeable future actions, in conjunction with the no-action alternative, would have long-term, negligible, adverse impacts on Park operations. Because the no-action alternative would also constitute a long-term, negligible, adverse impact, the overall cumulative impacts to Park operations would be short and long term, negligible, and adverse. In the event landslide movement increases, cumulative effects from past, present, and reasonably foreseeable future actions, including the no-action alternative, would be short term, minor to moderate, and adverse, as well as long term, negligible, and adverse.

## Socioeconomic Environment

No action would be taken in this alternative and, therefore, there would be no impact to the socioeconomic environment. If portions of Hurricane Ridge Road should be subject to closure or restricted use due to landslide activity, there could be an impact to the socioeconomic environment through reduced tourism; however, other areas of the Park would remain open and other attractions in the area would continue to draw tourist, so the impacts would be negligible.

**Cumulative Impacts.** Socioeconomics in the area are impacted by hiring and spending related to construction projects and by development and logging in the Port Angeles area. These impacts represent overall short- and long-term, minor to moderate, beneficial contributions to the local economy. Because the no-action alternative would not affect the socioeconomic environment, it would not contribute to cumulative impacts. In the case of potential road closures or restrictions due to landslide activities, the impacts would provide negligible contributions to the cumulative impacts and overall cumulative impacts would remain short- and long-term, minor to moderate, and beneficial.

**Conclusion.** No action would be taken in this alternative and, therefore, there would be no impact to the socioeconomic environment. If portions of Hurricane Ridge Road should be subject to closure or restricted use due to landslide activity, there could be an impact to the socioeconomic environment through reduced tourism; however, other areas of the Park would remain open and other attractions in the area would continue to draw tourists, so the impacts would be negligible. These impacts represent overall short- and long-term, minor to moderate, beneficial contributions to the local economy. Because the no-action alternative would not affect the socioeconomic environment, it would not contribute to cumulative impacts. In the case of potential road closures or restrictions due to landslide activities, the impacts would provide negligible contributions to the cumulative impacts and the overall cumulative impacts would remain short- and long-term, minor to moderate, and beneficial.

## **ENVIRONMENTAL CONSEQUENCES — ALTERNATIVE 2: PREFERRED ALTERNATIVE**

### **Air Quality**

Under the preferred alternative, construction activities on Hurricane Ridge Road would cause short-term impacts from construction vehicle emissions and from fugitive dust emissions. Fugitive dust emissions would be controlled by minimizing the area of disturbed soils and keeping the disturbed soils moist. Vehicle emissions would be controlled by requirements to minimize engine idling and shut down equipment if it is idling for an extended period. Visitor traffic would be encouraged to shut off their engines during traffic delays that would extend for longer than a few minutes. Air quality impacts would be expected to be within air quality standards and likely not detectable. The impacts to air quality from construction activities would be short term, negligible, and adverse. Once construction is complete, there would be no long-term impacts to air quality.

**Cumulative Impacts.** Air quality in the area is impacted over the long term by past, present, and reasonably foreseeable logging and development in the Port Angeles area. This is the primary source of air pollutants for the north side of the Park. Construction projects inside and outside of the Park, including road maintenance and repair and the Hurricane Ridge Visitor Center parking area improvements, provide short-term impacts during the length of the construction projects. The cumulative effects of these past, present, and reasonably foreseeable future actions would have short-term, negligible, adverse impacts from constructions activities and long-term, minor to moderate, adverse impacts on air quality from logging and development activities outside the Park. The preferred alternative would

provide negligible contributions to the short-term impacts and no long-term contributions to impacts to air quality.

**Conclusion.** The impacts to air quality from construction activities would be short term, negligible, and adverse. Once construction is complete, there would be no long-term impacts to air quality. The cumulative effects of past, present, and reasonably foreseeable future actions would have short-term, negligible, adverse impacts from constructions activities and long-term, minor to moderate, adverse impacts on air quality from logging and development activities outside the Park. The preferred alternative would provide negligible contributions to the short-term impacts and no long-term contributions to impacts to air quality.

**Impairment.** Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill the specific purposes identified in the Park's establishing legislation, (2) key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park, or (3) identified as a goal in the Park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of air quality.

## Soils

This alternative proposes to rehabilitate the road surface, improve drainage and stability in landslide areas, improve the intersection of Hurricane Ridge Road and Mount Angeles Road, improve parking areas and turnoffs, and reconfigure turnouts. An estimated 21.5 acres of currently disturbed area within the road prism (assuming a construction zone of 5.0 feet of the fillslopes and foreslopes on each side of the road) could be affected by project construction related to lane widening (e.g., grading, ditch cleaning and reestablishment, and shoulder blending). Soil disturbance would occur to a total of approximately 22.6 acres when all road improvements are considered (see table 1). Impacts on soils from construction include trampling, cuts and fills, and some soils would be covered with relatively impermeable materials such as concrete. Surface soil horizons would be altered, topsoil would be removed, and some soil would be compacted and compressed. These consequences would result in a localized decrease in soil permeability to water and air, alteration of soil regime, and an increase in localized runoff and channelization.

Once construction is complete, disturbed areas within the construction zone would be returned to natural conditions by scarification, which decompacts the soil; the site topography would be returned to its preconstruction contours as much as possible. Areas disturbed by construction would be revegetated. Revegetation would facilitate soil stability; help to reduce runoff, channelization, and erosion; and help the soil to restore itself to natural conditions. Much of this area is already generally disturbed from vehicle impacts, landslides, etc. At the end of the project, approximately 22.6 acres of soil would be restored to natural conditions as a result of reclaiming: (1) roadside (approximately 21.5 acres) and landslide (approximately 0.7 acre) areas; (2) portions of two parking areas (approx 0.1 acre); and (3) portions of four turnouts (approx. 0.3 acre).

The steep nature of the Olympic topography makes it particularly susceptible to geologic hazards in the form of rock or soil movement. Several sections of Hurricane Ridge Road,



including parking areas, are being upgraded as a part of this project in an attempt to minimize or prevent further movement as a result of soil creep and landslides. The proposed work in these areas would be designed to minimize further movement and stabilize soils resulting in long-term, localized, moderate, beneficial impacts.

Short-term impacts to soil resources would be localized, minor, and adverse. Over the long term, soil resources in the reclaimed areas would be restored to natural conditions and long-term adverse impacts would be negligible. In landslide areas, long-term, moderate, beneficial impacts would occur as a result of soils stabilization.

**Cumulative Impacts.** Soils in the vicinity are impacted by past, present, and reasonably foreseeable future logging and development such as roads, buildings, landscaping, and utility lines on federal, tribal, state, and private lands. Soils are excavated and replaced, buried beneath concrete, and eroded. Cumulative effects to soils of these past, present, and reasonably foreseeable future actions would have short- and long-term, minor to moderate, adverse impacts on soils. The preferred alternative would contribute short-term minor and long-term, negligible, adverse impacts to cumulative effects on soils. Therefore overall, short- and long-term, cumulative impacts would be minor to moderate and adverse.

**Conclusion.** Short-term impacts to soil resources would be localized, minor, and adverse. Over the long term, soil resources in reclaimed areas would be restored to natural conditions and impacts would be negligible. In landslide areas, long-term, moderate, beneficial impacts would occur as a result of soils stabilization. Cumulative effects to soils of past, present, and reasonably foreseeable future actions would have short- and long-term, minor to moderate, adverse impacts on soils. The preferred alternative would contribute short-term minor and long-term negligible, adverse impacts to cumulative effects on soils. Therefore, overall short- and long-term cumulative impacts would be minor to moderate and adverse.

**Impairment.** Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill the specific purposes identified in the Park's establishing legislation, (2) key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park, or (3) identified as a goal in the Park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of soils.

## **Vegetation**

Generally, road rehabilitation activities such as asphalt milling, paving the road surface and shoulders, paving the turnouts, adding concrete curbs and gutters, reconfiguring the intersection and parking areas, and installing culvert headwalls, would disturb currently paved or graveled surface areas that do not support vegetation and are of no habitat value to wildlife. Assuming a construction zone of 5.0 feet of the fillslopes and foreslopes on each side of the road, lane widening would result in the disturbance of approximately 21.5 acres of roadside vegetation that consists mainly of non-native species. Approximately 1.1 acre of vegetation would be disturbed from the remainder of the construction activities, resulting in 22.6 acres of total disturbance (see table 1). However, the area below the tunnels (approximately 11.9 acres of the total 22.6 acres) is generally disturbed (from vehicle impacts,

landslides, etc.) and supports primarily non-native species. Therefore, short-term, minor, adverse impacts to roadside vegetation are anticipated.

Following construction, approximately 22.6 acres of disturbed habitat would be restored primarily as a result of: (1) removing non-native species in roadside areas and revegetating with native species; (2) reclaiming landslide disturbances; and (3) scaling back turnouts and revegetating the previously disturbed areas. Also, measures would be taken to minimize invasion by non-native species. The restoration of non-native species to native species, if successful, could result in a long-term, minor, beneficial effect on local vegetation.

**Cumulative Impacts.** Logging and development have and will continue to have adverse effects on vegetation of the Olympic Peninsula. Construction and use of roads, trails, utility lines, landscaping, and other development disturbs or destroys vegetation. Non-native species are being imported to the area, both accidentally and intentionally (for landscaping). The cumulative effects of these past, present, and reasonably foreseeable future actions would have regional, short- and long-term, minor, adverse impacts on vegetation. The preferred alternative would contribute short-term, minor, adverse impacts and long-term, minor, beneficial effects to cumulative effects on vegetation. Therefore, short- and long-term, minor, cumulative impacts on vegetation would be anticipated.

**Conclusion.** Short-term, minor, adverse impacts to roadside vegetation are anticipated from project activities. A long-term, minor, beneficial impact to local vegetation is anticipated from removing non-native vegetation in the Hurricane Ridge Road corridor and revegetating with native species. The cumulative effects of past, present, and reasonably foreseeable future actions would have regional, short- and long-term, minor, adverse impacts on vegetation. The preferred alternative would contribute short-term, negligible, adverse impacts and long-term, minor, beneficial effects to cumulative effects on vegetation. Therefore, short- and long-term, negligible to minor, cumulative impacts on vegetation would be anticipated.

**Impairment.** Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill the specific purposes identified in the Park's establishing legislation, (2) key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park, or (3) identified as a goal in the Park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of vegetation.

## Wildlife

Throughout and near the road corridor, wildlife has been mostly habituated to human activity through years of close association with the road and attendant human activity, vehicles, and noise. Loss of wildlife would be proportional to the amount of habitat lost. Generally, rehabilitation activities such as asphalt milling, paving the road surface and shoulders, paving the turnouts, adding concrete curbs and gutters, reconfiguring the intersection and parking areas, and installing culvert headwalls, would disturb currently paved or graveled surface areas that do not support vegetation and are of little habitat value to wildlife. Assuming a construction zone of 5.0 feet of the fillslopes and foreslopes on each side of the road, lane widening would result in the disturbance of approximately 21.5 acres of

roadside vegetation, which consists mainly of non-native plant species. Approximately 1.1 acre of vegetation would be disturbed from the remainder of the construction activities, resulting in 22.6 acres of total disturbance (see table 1). However, all of these areas are generally disturbed (from vehicle impacts, landslides, etc.) and support primarily non-native vegetation species, providing little habitat value to wildlife. Noise and human presence during construction activities would cause short-term impacts to wildlife species; however, these impacts would disappear and wildlife usage would return to normal as construction is completed.

During construction, some wildlife, particularly small mammals and reptiles, would be temporarily displaced. Some individuals would be forced to relocate outside the construction limits and be susceptible to increased levels of predation or competitive stress. This displacement would result in a slight population depression adjacent to the corridor, but following project completion and successful restoration, wildlife would again reoccupy restored portions of the project area. It is likely that certain larger species such as the Columbia black-tailed deer and black bear, would avoid the road corridor altogether during construction. Therefore, implementing this alternative is expected to have local, short-term (duration of the project and revegetation / habitat restoration), negligible, adverse impacts on wildlife. Due to the location of this habitat directly adjacent to the roadway, it is generally considered low value habitat for wildlife.

Following construction, approximately 22.6 acres of disturbed habitat would be restored primarily as a result of: (1) removing non-native species in roadside areas and revegetating with native species; (2) reclaiming landslide disturbances; and (3) scaling back turnouts and revegetating the previously disturbed areas. The rehabilitation of approximately 22.6 acres of previously disturbed areas, including the removal of non-native vegetation and revegetation with native species, would have a local, long-term, negligible, beneficial effect on wildlife.

**Cumulative Impacts.** Logging and development have and would continue to have adverse impacts to wildlife on the Olympic Peninsula through disturbance, displacement, killing, and habitat fragmentation, although this would be primarily on private and state lands. The geotechnical investigation and visitor center parking area projects at Olympic National Park provided local contributions to these adverse effects as a result of additional noise and human presence. The cumulative effects of these past, present, and reasonably foreseeable actions would have short- and long-term, negligible to minor, adverse impacts on wildlife. The preferred alternative would provide negligible, local contributions to these effects. Therefore, the past, present, and reasonably foreseeable future actions, in conjunction with the preferred alternative, would have short- and long-term, negligible to minor, and adverse, cumulative impacts on wildlife.

**Conclusion.** Implementing the preferred alternative is expected to have local, short-term (duration of the project and revegetation / habitat restoration), negligible to minor, adverse impacts on wildlife. The rehabilitation of approximately 22.6 acres of previously disturbed areas, including the removal of non-native vegetation and revegetation with native species, would have a local, long-term, negligible, beneficial effect on wildlife. The cumulative effects of past, present, and reasonably foreseeable actions, in conjunction with the preferred alternative, would have short- and long-term, negligible to minor, adverse impacts on

wildlife. The preferred alternative would provide negligible to minor, local contributions to these effects.

**Impairment.** Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill the specific purposes identified in the Park's establishing legislation, (2) key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park, or (3) identified as a goal in the Park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of wildlife.

### Threatened and Endangered Species and Species of Special Concern

Under the preferred alternative, impacts to marbled murrelets and Northern spotted owls would be due to human presence and the generation of noise. Use of any construction equipment on Hurricane Ridge Road would create noise levels that could cause exceedance of the combined injury threshold and incidental take for Northern spotted owls on 541 acres, and for marbled murrelets on 164 acres (see appendix B for a detailed description of how these acreages were calculated). It is important to note that the incidental take would not result in alteration or loss of habitat for either the Northern spotted owl or marbled murrelet.

New disturbances associated with the road rehabilitation, drainage improvements in landslide areas, reconfiguration of parking areas, paving of two turnouts, formalization of a turning lane, and reconfiguration of the Mount Angeles Road and Hurricane Ridge Road intersection, would result in the removal of approximately 22.6 acres of roadside vegetation, which consists mainly of non-native species below the tunnels. Most of the disturbance would occur within the existing road prism on previously disturbed lands. Approximately 0.3 acre of this roadside vegetation, mainly non-native species, would be permanently lost. Loss of non-native habitat would not affect Northern spotted owls, marbled murrelets, or bald eagles and would be offset in the reclamation associated with reducing the size of four turnouts. These activities would not affect the bald eagle.

Several trees would be removed in the reconfiguration of the parking area between Stations 476+78.48 and Station 479+95.04; however, these trees do not provide adequate old-growth characteristics for nesting Northern spotted owls or marbled murrelets.

At the end of the project, approximately 22.6 acres of previously and temporarily disturbed habitat would be revegetated and restored adjacent to the existing roadway, in landslide areas, or in turnouts that are scaled back. Overall, there would be no net loss or gain of marbled murrelet or Northern spotted owl habitat.

Over the short term, indirect, adverse impacts to marbled murrelets could occur from the attraction of corvids (e.g., the common raven) to the project area, resulting in an increase in egg and/or nestling predation. Direct and/or indirect effects to individual Northern spotted owls are not anticipated. The bald eagle would not be affected, directly or indirectly, either at a habitat or individual level. Prey species for the marbled murrelet and bald eagle would not be affected; Northern spotted owl prey (small mammals) may receive impacts due to construction, but this would be negligible and temporary.

Construction-related impacts, including noise generated along Hurricane Ridge Road, would not affect nesting bald eagles because they do not use the project area. It is unlikely that bald eagles passing through the project area would be affected by construction-generated noise. Individual bald eagles would avoid this road reach and continue on to suitable foraging or nesting habitat. The overall effects from the road construction activities would be short term, minor to moderate, and adverse for the Northern spotted owl and marbled murrelet. There would be no effects to the bald eagle.

A biological assessment has been prepared and submitted to the U.S. Fish and Wildlife Service. The determination of effect in the biological assessment is “likely to adversely affect” the marbled murrelet and Northern spotted owl.

Following construction, approximately 22.6 acres of disturbed habitat would be restored primarily as a result of: (1) removing non-native species in roadside areas and revegetating with native species; (2) reclaiming landslide disturbances; and (3) scaling back turnouts and revegetating the previously disturbed areas. Overall, there would be no net loss or gain of marbled murrelet or Northern spotted owl habitat. Also, these activities would not affect the bald eagle. The restoration of non-native species to native species could have a local, long-term, negligible, beneficial effect on Northern spotted owls and marbled murrelets, but would not affect bald eagles.

**Cumulative Impacts.** Past and future actions that could contribute to cumulative effects include development in the Port Angeles area and logging on lands managed by local, state, and federal agencies, as well as private citizens. Development and logging increase forest fragmentation and direct removal of forest habitat used by the Northern spotted owl and marbled murrelet. Disturbances caused by human development in low elevation areas have, and would continue to have, a cumulative effect on marbled murrelets and Northern spotted owls through loss of habitat and displacement of individuals. For marbled murrelets, pollution, recreational and commercial boating, and near-shore development in the marine environment degrade such habitat, and are expected to continue. Substantial influences of pollution, habitat loss, and direct losses to oil spills and net entanglements are operating upon marbled murrelets within the marine environment (USFWS 2003a).

The geotechnical investigation and visitor center parking area projects also contributed to cumulative impacts, although additional activity in the visitor center parking area was inconsequential, based on current levels of human presence in this area.

The cumulative effects of these past, present, and reasonably foreseeable future actions would have regional, short- and long-term, minor to moderate, adverse impacts on these species. The preferred alternative would provide negligible to moderate, local, short- and long-term contributions to these effects on Northern spotted owls and marbled murrelets. The preferred alternative would not contribute to cumulative impacts on the bald eagle. Therefore, the past, present, and reasonably foreseeable future actions, in conjunction with the preferred alternative, would have regional, short-term, negligible to moderate, and adverse cumulative impacts on threatened, endangered, or special concern species. The preferred alternative would provide no long-term contributions to cumulative impacts.

**Conclusion.** Virtually all impacts to marbled murrelets and Northern spotted owls under the preferred alternative are anticipated to be due to the generation of noise that may disturb them. Use of this construction equipment on Hurricane Ridge Road, with mitigation, would cause:

- local, short- and long-term, minor to moderate, adverse impacts on marbled murrelets
- local, short- and long-term, minor to moderate, adverse impacts on Northern spotted owls
- no impacts on bald eagles

Following construction, approximately 22.6 acres of disturbed habitat would be restored, including the removal of non-native vegetation and revegetation with native species. The restoration of non-native species to native species could have a local, long-term, negligible, beneficial effect on Northern spotted owls and marbled murrelets, but would not affect bald eagles. Local, short- and long-term, negligible, adverse impacts to individual marbled murrelets could occur from the increased presence of corvids in the construction zone.

The bald eagle, or its habitat, would not be affected by the construction activities or associated noise. The past, present, and reasonably foreseeable future actions, in conjunction with the preferred alternative, would have regional, short- and long-term, negligible to moderate, and adverse cumulative impacts on threatened, endangered, or special concern species. The preferred alternative would provide short-term, negligible to moderate, local contributions to the cumulative effects on Northern spotted owls and marbled murrelets, but would have no long-term contributions to cumulative effects. The preferred alternative would not contribute to cumulative impacts on the bald eagle.

**Impairment.** Because there would be no major adverse impacts to a resource or value whose conservation is (1) necessary to fulfill the specific purposes identified in the Park's establishing legislation, (2) key to the natural or cultural integrity of the Park or to opportunities for enjoyment of the Park, or (3) identified as a goal in the Park's *General Management Plan* or other relevant National Park Service planning documents, there would be no impairment of threatened, endangered, or sensitive species.

## Visitor Experience

Construction vehicles associated with the project would contribute to already heavy traffic using Hurricane Ridge Road and associated Park roads. During construction activities, visitors using Hurricane Ridge Road would be subject to the increased traffic from heavy equipment and commercial trucks hauling construction material, as well as noise, dust, and visual intrusion. Although one lane of Hurricane Ridge Road would be open during the spring, summer, and fall visitor seasons, and flaggers or battery operated signals would be available to control traffic, visitors would experience traffic delays up to one hour per round trip. Although visitors caught in the delays would be frustrated and consider the delays interminable, several measures would be taken to notify visitors in advance and to reduce these impacts (see "Mitigation Measures"). Other mitigation measures considered were to complete the project during winter months or to close the road completely during construction. Both were eliminated; the former due to snow

conditions and temperature considerations, and the latter due to economic impacts and impacts to Park visitors. Visitors would not be affected during the winter schedule as construction activities would be limited to those days when Hurricane Ridge Road is closed. In addition, construction along Hurricane Ridge Road would not occur at night or on holidays, and could only occur on weekends with prior approval of the Park superintendent. Even with the implementation of mitigation measures, visitors using Hurricane Ridge Road would be aware of the construction activities and would likely comment on the delays. Table 9 shows project road closures and the construction schedule developed for the project. Therefore, local, short-term, moderate, adverse effects to visitor use and experience would be expected during project construction.

Closing the road to bicyclists during construction would result in short-term, minor to moderate, adverse effects on visitor experience. This impact would be limited to those individuals that bike Hurricane Ridge Road during the spring, summer, and fall visitor seasons. An option to allow bicyclists to continue to use the road during construction was discussed, however, bicyclists' safety cannot be assured so safety outweighed the temporary impacts of closure to bicyclists.

Local, long-term, minor, beneficial effects on visitor experience are anticipated under the preferred alternative. These effects would be a result of improved travel conditions on the repaved surface; widened road shoulders that would provide safer conditions for the many bicyclists that ride Hurricane Ridge Road; improved and additional parking at the visitor center; improvements to minimize continued landslide movement and resulting road / parking area damage; and the reconfiguration of the Mount Angeles Road / Hurricane Ridge Road intersection to better direct visitors to the Park.

**Cumulative Impacts.** The Hurricane Ridge Visitor Center parking area project, ongoing maintenance activities along Hurricane Ridge Road, and the geotechnical investigation of Hurricane Ridge Road, affected or would affect visitor experience during these activities by causing traffic delays associated with drilling and the presence of heavy equipment on the road and in the visitor center parking area. These activities have short-term, negligible to minor, adverse effects; however, in the long term, they would have negligible, beneficial effects on visitor experience by improving the travel surface and parking area and providing the background data needed to recommend appropriate activities to ensure the integrity of the road base, helping to reduce future maintenance requirements. The preferred alternative would have a moderate effect on the short-term, adverse, cumulative impacts, and would provide minor contributions to the beneficial effects. Therefore, the past, present, and reasonably foreseeable future actions, in conjunction with the preferred alternative, would have short-term, minor to moderate, adverse, cumulative impacts on visitor experience. Long-term cumulative impacts would be negligible to minor and beneficial on visitor experience.

TABLE 9. PROJECT ROAD CLOSURES

**Project Road Closures / OLYM Operation Plan**  
**Hurricane Ridge Road Rehabilitation**

June 29, 2004

<b>January:</b>	<u>Winter Ops.</u> in effect, road closed M,T,W,T Road Open Fri, Sat, Sun, 9 AM to 5 PM
<b>February:</b>	<u>Winter Ops.</u> in effect, road closed M,T,W, T Road Open Fri, Sat, Sun, 9 AM to 5 PM
<b>March:</b>	<u>Winter Ops.</u> in effect, road closed M,T,W,T Road Open Fri, Sat, Sun, 9 AM to 5 PM
<b>April:</b>	<u>Winter Ops.</u> in effect, road closed M,T,W, T Road Open Fri, Sat, Sun, 9 AM to 5 PM Contractor <i>can</i> work 7 days a week
<b>May:</b>	<u>Regular Season</u> , Road open 7 days a week 24 hrs a day Contractor <i>can</i> work on weekends
<b>June:</b>	<u>Regular Season</u> , Road open 7 days a week 24 hrs a day Contractor <i>can't</i> work on weekends
<b>July:</b>	<u>Regular Season</u> , Road open 7 days a week 24 hrs a day Contractor <i>can't</i> work on weekends
<b>August:</b>	<u>Regular Season</u> , Road open 7 days a week 24 hrs a day Contractor <i>can't</i> work on weekends
<b>September:</b>	<u>Regular Season</u> , Road open 7 days a week 24 hrs a day Contractor <i>can</i> work on weekends
<b>October:</b>	<u>Winter Ops.</u> in effect, road closed M,T,W, T Road Open Fri, Sat, Sun, 9 AM to 5 PM Contractor <i>can</i> work 7 days a week
<b>November:</b>	<u>Winter Ops.</u> in effect, road closed M,T,W, T Road Open Fri, Sat, Sun, 9 AM to 5 PM Contractor <i>can</i> work 7 days a week
<b>December:</b>	<u>Winter Ops.</u> in effect, road closed M,T,W, T Road Open Fri, Sat, Sun, 9 AM to 5 PM Contractor <i>can</i> work 7 days a week

## NOTES:

1. Delays of up to 30 minutes for inbound and outbound traffic would be allowed if there are less than 10 vehicles per hour (VPH). Delays would be limited to maximum 20 minutes if over 10 VPH.
2. Ski area opens at the end of December.
3. Ski area closes at the end of March.
4. When ski area is open, there would be no weekend work.
5. Contractor cannot work on holidays.
6. Contractor may request permission to plow the road at their own expense for construction if the road has not been opened by OLYM or the crew is not working in the area. The superintendent would make the final determination through the contracting officer with requirements regarding safety and protection of Park resources specified.
7. No work from the day before Christmas Day to the day after New Year's Day.

**Conclusion.** Over the short term, local, moderate, adverse effects to visitor use and experience would be expected during project construction as a result of noise, dust, fumes, delays, and construction vehicle traffic. Closing the road to bicyclists during construction would result in short-term, minor to moderate, adverse effects on visitor experience. This impact would be limited to those individuals that bike Hurricane Ridge Road during the spring, summer, and fall visitor seasons.



Local, long-term, minor, beneficial effects on visitor experience are anticipated under the preferred alternative. These effects would be a result of improved travel conditions on the repaved surface; widened road shoulders that would provide safer conditions for the many bicyclists that ride Hurricane Ridge Road; improved and additional parking at the visitor center; improvements to minimize continued landslide movement and resulting road / parking area damage; and the reconfiguration of the Mount Angeles Road / Hurricane Ridge Road intersection to better direct visitors to the Park.

Past, present, and reasonably foreseeable future actions, in conjunction with the preferred alternative, would have short-term, minor to moderate, adverse, cumulative impacts on visitor experience. Long-term cumulative impacts would be negligible to minor, and beneficial on visitor experience. The preferred alternative would have a moderate effect on the short-term, adverse, cumulative impacts, and would provide minor contributions to the beneficial effects.

### **Park Operations**

The service life of Hurricane Ridge Road and associated turnouts, parking areas, and intersections would be extended by several decades and meet National Park Service road standards. Improvements to the Hurricane Ridge Road corridor, including the repaving, installation of culvert headwalls, and elimination of turnouts, would reduce the maintenance requirements and associated costs of the existing road. Improvements in landslide areas would reduce the need for continual monitoring and repair of the road in these damaged locations. This would also minimize the potential for an increase in movement in those areas that would result in temporary closures or restrictions for the road and/or the parking area. The consistent 11-foot travel lanes would meet the recommended National Park Service road standard for lanes.

Construction vehicles associated with the project would contribute to already heavy traffic using Hurricane Ridge Road. Because of frequent use by heavy vehicles, there might be some potential for road and bridge damage. However, enforcement of weight limits and other federal, state, and local regulations and contractual stipulations would minimize the potential for conflicts and/or damage. To avoid conflicts with routine Park maintenance and operations in the Hurricane Ridge Road corridor, the construction contractor would notify the Park of any full-width construction activities that result in road closures during the winter schedule or otherwise.

Once road reconstruction actions are completed, there would be a shift from routine maintenance requirements (constant patching, culvert cleaning, and minor repairs) to programs of drainage ditch clearance and other preventive maintenance critical to attaining the full service life of the road. Implementation would substantially reduce maintenance costs, and the reconstruction would make the road serviceable for several decades without major maintenance needs. Therefore, this alternative would have a long-term, minor to moderate, beneficial effect on Park operations.

**Cumulative Impacts.** The cumulative effects of the geotechnical investigation and visitor center parking area projects at Olympic National Park had local, short-term, negligible,

adverse, and long-term, minor, beneficial, impacts on Park operations. The preferred alternative would provide long-term, minor to moderate, local contributions to these cumulative effects. Therefore, the past, present, and reasonably foreseeable future actions, in conjunction with the preferred alternative, would have local, long-term, minor to moderate, beneficial, cumulative impacts to Park operations.

**Conclusion.** Long-term, minor, beneficial effects would result from the reduction in road maintenance requirements and associated costs in the road corridor. Past, present, and reasonably foreseeable future actions, in conjunction with the preferred alternative, would have long-term, minor to moderate, beneficial, cumulative impacts on Park operations.

## **Socioeconomic Environment**

Visitors to Olympic National Park and the region surrounding Olympic National Park have a number of recreational opportunities. The trip to Hurricane Ridge is popular for the scenic vistas and wintertime skiing opportunity. Park visitors account for 62% of tourism spending in Clallam and Jefferson Counties. Construction work would cause delays on Hurricane Ridge Road; however, mitigation measures would be implemented to reduce the delays to the minimum time practicable (see “Mitigation Measures”). Some tourists would likely avoid the road during the construction period due to the construction delays; however, overall visitation would likely be reduced only negligibly. Due to the expected minimal reduction in the number of tourists visiting Hurricane Ridge Road and the availability of other tourist sites and activities in the area, the associated impacts to tourism and the socioeconomics to the concessioner and in the Port Angeles area in general during the construction period would be short term, negligible, and adverse.

Construction workers would likely be hired locally, but could be from a larger area. Worker spending would provide a negligible beneficial contribution to the overall economy during the short-term construction period.

Over the long term, the construction work would be completed and there would be no long-term impacts to the socioeconomic environment.

**Cumulative Impacts.** Socioeconomics in the area are impacted by hiring and spending related to construction projects and by development and logging in the Port Angeles area. These impacts represent overall short- and long-term, minor to moderate, beneficial contributions to the local economy. The preferred alternative would provide negligible, short-term, adverse, and beneficial contributions to the cumulative impacts and the overall cumulative impacts would continue to be short and long term, minor to moderate, and beneficial.

**Conclusion.** Impacts to tourism and the socioeconomics in the Port Angeles area during the construction period would be short term, negligible, and adverse. Worker spending would provide a negligible beneficial contribution to the overall economy during the short-term construction period. There would be no long-term impacts to the socioeconomic environment. The preferred alternative would provide negligible short-term, adverse, and

beneficial contributions to the cumulative impacts and the overall cumulative impacts would continue to be short and long term, minor to moderate, and beneficial.

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## **CONSULTATION AND COORDINATION**

A press release was distributed on September 24, 2003, requesting scoping comments related to the Hurricane Ridge Road project. A copy of the press release is attached as appendix C. The press release was sent to approximately 200 media outlets, interested groups, public officials, agencies, and individuals in the Puget Sound and Olympic Peninsula area. In addition, approximately 70 letters were sent to individuals, organizations, and agencies, plus more than 300 letters were sent to individuals who live near the project area, requesting comments related to the Hurricane Ridge Road project. Ten individuals and one organization responded with comments and potential project issues, which were considered in the development of this environmental assessment.

Agencies and organizations contacted for information that assisted in identifying issues, or that would be provided with an opportunity to review and comment on this environmental assessment include, but are not limited to, the following:

### **Federal Agencies**

- Advisory Council on Historic Preservation

- Department of Agriculture

  - U.S. Forest Service

  - Olympic National Forest:

    - Forest Supervisor

    - Pacific District Ranger

- Department of the Interior

  - Fish and Wildlife Service, Western Washington Office

- Department of Transportation

  - Federal Highway Administration, Western Federal Lands Highway Division

- National Oceanic and Atmospheric Administration

  - Olympic Coast National Marine Sanctuary

- U.S. Army Corps of Engineers

- U.S. Coast Guard

- U.S. Environmental Protection Agency

### **State Agencies**

- State of Washington

- Department of Ecology

- Department of Fish and Wildlife, Region 6

- Department of Natural Resources

- Department of Parks and Recreation

  - Office of Archeology and Historic Preservation

## **Local Agencies**

City of Forks  
City of Port Angeles  
City of Sequim  
Clallam County Commissioners  
Clallam County Economic Development Council  
Grays Harbor County Commissioners  
Hurricane Ridge Public Development Authority  
Jefferson County Commissioners  
Kitsap County Commissioners  
Mason County Commissioners  
North Olympic Peninsula Visitors and Convention Bureau

## **American Indian Tribes**

Lower Elwha S’Klallam Tribe

## **Other Groups and Individuals**

Friends of Lake Crescent  
Institute for Policy Research  
National Parks and Conservation Association  
Northwest Ecosystem Alliance  
Olympic Coast National Marine Sanctuary  
Olympic Outdoor Sportsmen’s Association  
Olympic Park Associates  
Olympic Peninsula Audubon Society  
Port Angeles Bike Club  
Port Angeles Chamber of Commerce  
Port Angeles, Victoria Visitor Bureau  
Protect the Peninsula’s Future  
Sierra Club, Cascade Chapter  
The Wilderness Society  
University of Washington, Olympic Resource Center  
U.S. Representative Norm Dicks  
U.S. Senator Patty Murray  
Washington Environmental Council  
Washington’s National Park Fund  
Washington Representative, Lynn Kessler  
Wilderness Watch

## **Area Libraries**

North Olympic Library System

## **LIST OF PREPARERS**

This environmental assessment was prepared by engineering-environmental Management, Inc., under the direction of the National Park Service. Denver Service Center and Olympic National Park staff provided invaluable assistance in the development and technical review of this environmental assessment. National Park Service staff who provided information include:

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**APPENDIX A**  
**U.S. FISH AND WILDLIFE SERVICE SPECIES LIST**

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**LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CRITICAL  
HABITAT; CANDIDATE SPECIES; AND SPECIES OF CONCERN  
IN THE WESTERN PORTION OF WASHINGTON STATE**

**PREPARED BY:**

**U.S. FISH AND WILDLIFE SERVICE  
WESTERN WASHINGTON FISH AND WILDLIFE OFFICE**

**(Revised 24 December 2002)**

**CLALLAM COUNTY**

**LISTED**

Wintering bald eagles (*Haliaeetus leucocephalus*) occur in the county from about 31 October through 31 March.

There are two bald eagle communal winter night roosts located in the county.

There are four bald eagle wintering concentrations located in the county at Lake Ozette, Neah Bay, and along the Washington coast.

There are 147 bald eagle nesting territories located in the county. Nesting activities occur from about 1 January through 15 August.

Brown pelicans (*Pelecanus occidentalis*) occur along the outer coast in the county.

Bull trout (*Salvelinus confluentus*) occur in the county.

Green sea turtles (*Chelonia mydas*) may occur along the outer coast in the county.

Leatherback sea turtles (*Dermochelys coriacea*) may occur along the outer coast in the county.

Loggerhead sea turtles (*Caretta caretta*) may occur along the outer coast in the county.

Marbled murrelets (*Brachyramphus marmoratus*) occur in the county. Nesting murrelets occur from 1 April through 15 September.

Northern spotted owls (*Strix occidentalis caurina*) occur in the county throughout the year.

Olive Ridley sea turtles (*Lepidochelys olivacea*) may occur along the outer coast in the county.

Short-tailed albatross (*Phoebastria albatrus*) may occur in the county.

Major concerns that should be addressed in your biological assessment of

project impacts to listed species include:

1. Level of use of the project area by listed species.
2. Effect of the project on listed species' primary food stocks, prey species, and foraging in all areas influenced by the project.
3. Impacts from project activities and implementation (e.g., increased noise levels, increased human activity and/or access, loss or degradation of habitat) that may result in disturbance to listed species and/or their avoidance of the project area.

## DESIGNATED

- Critical habitat for the northern spotted owl has been designated in Clallam County.
- Critical habitat for the marbled murrelet has been designated in Clallam County.

## PROPOSED

None

## CANDIDATE

Mazama pocket gopher (*Thomomys mazama* ssp.)(includes ssp. *couchi*, *glacialis*, *louiei*, *melanops*, *pugetensis*, *tacomensis*, *tumuli*, *yelmensis*)  
Whulge (Edith's) checkerspot (*Euphydryas editha taylori*)

## SPECIES OF CONCERN

Aleutian Canada goose (*Branta canadensis leucopareia*)  
California wolverine (*Gulo gulo luteus*)  
Cascades frog (*Rana cascadae*)  
Cassin's auklet (*Ptychoramphus aleuticus*)  
Long-eared myotis (*Myotis evotis*)  
Long-legged myotis (*Myotis volans*)  
Makah's copper (butterfly) (*Lycaena mariposa charlottensis*)  
Northern goshawk (*Accipiter gentilis*)  
Northern sea otter (*Enhydra lutris kenyoni*)  
Olive-sided flycatcher (*Contopus cooperi*)  
Oregon vesper sparrow (*Pooectetes gramineus affinis*)  
Pacific lamprey (*Lampetra tridentata*)  
Pacific fisher (*Martes pennanti pacifica*)  
Pacific Townsend's big-eared bat (*Corynorhinus townsendii townsendii*)  
Peregrine falcon (*Falco peregrinus*)  
Olympic torrent salamander (*Rhyacotriton olympicus*)  
River lamprey (*Lampetra ayresi*)  
Tailed frog (*Ascaphus truei*)  
Tufted puffin (*Fratercula cirrhata*)  
Valley silverspot (*Speyeria zerene bremeri*)

Van Dykes's salamander (*Plethodon vandykei*)

Western toad (*Bufo boreas*)

*Abronia umbellata* ssp. *breviflora* (*acutalata*) (pink sand verbenas)

*Astragalus australis* var. *olympicus* (Cotton's milk vetch)

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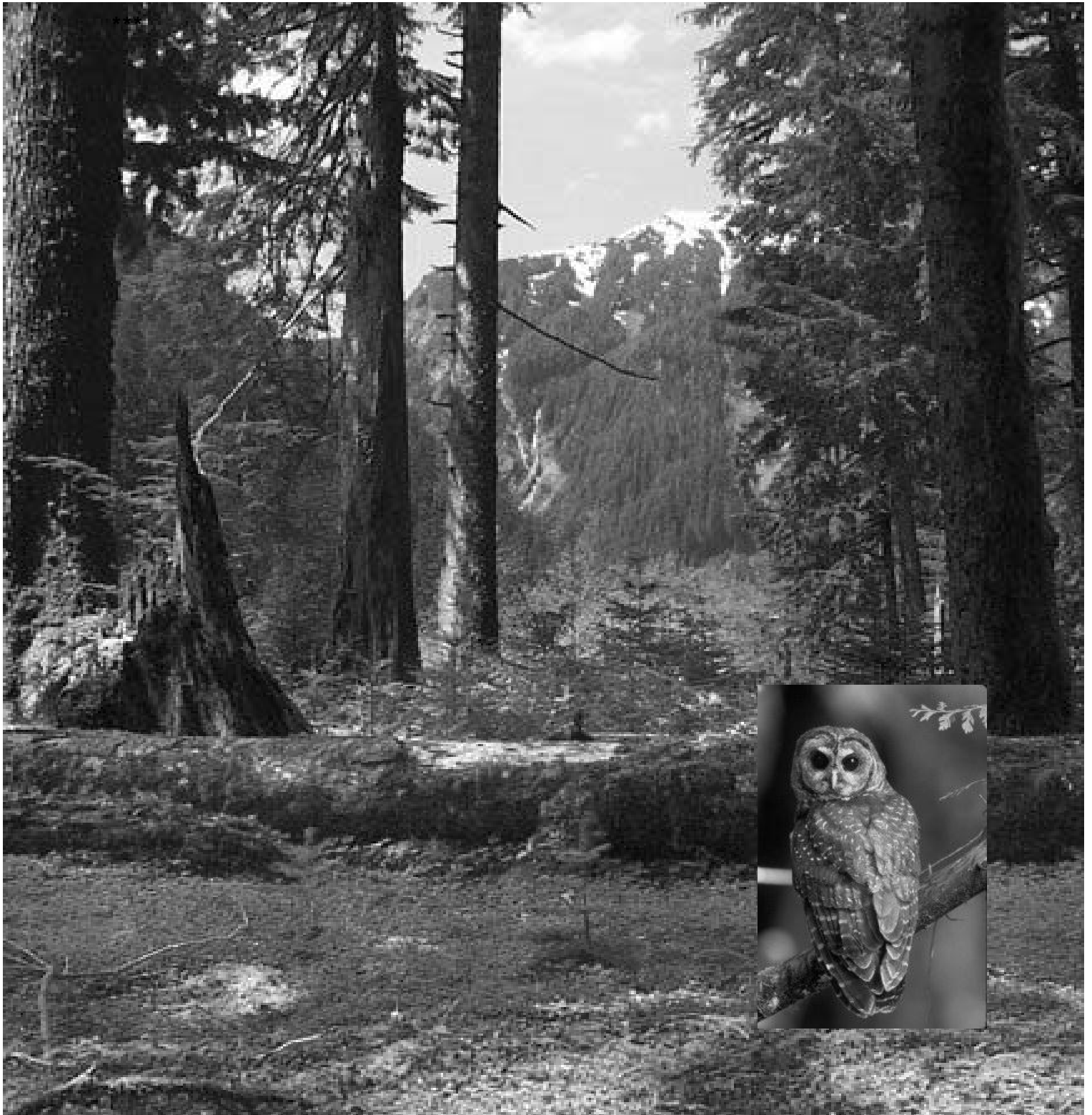
**APPENDIX B**  
**BIOLOGICAL ASSESSMENT**

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# Biological Assessment

Rehabilitate Hurricane Ridge Road Project  
May 2004



# BIOLOGICAL ASSESSMENT

## Rehabilitate Hurricane Ridge Road Project

Prepared For:  
National Park Service



Prepared By:  
engineering-environmental Management, Inc.



# Olympic National Park

## Washington

## **ACRONYMS AND ABBREVIATIONS**

CFR	Code of Federal Regulations
dB	Decibel
°F	Degrees Fahrenheit
NEPA	National Environmental Policy Act
NPS	National Park Service
USC	United States Code



## INTRODUCTION

In accordance with section 7(c) of the Endangered Species Act of 1973, as amended (16 *United States Code* (USC) 1531 *et seq.*), the National Park Service (NPS) requested from the U.S. Fish and Wildlife Service a species list of threatened and endangered species, species of concern, and designated critical habitats that may be affected by the proposed action to rehabilitate Hurricane Ridge Road located within Olympic National Park, Clallam County, Washington.

The U.S. Fish and Wildlife Service provided a list of threatened and endangered species (section 7 letter response) (Appendix A) that may occur in Clallam County. Two federally threatened species, the Northern spotted owl (*Strix occidentalis caurina*) and the marbled murrelet (*Brachyramphus marmoratus marmoratus*), are known to occur in the Hurricane Ridge Road corridor. The bald eagle (*Haliaeetus leucocephalus*), also threatened, is known to be a transient species within the project area and has been observed by park visitors and staff.

The bull trout (*Salvelinus confluentus*), federally-listed as threatened, has not been considered in this biological assessment because there would be no effect on waters that support this species or individuals. Drainages that originate in the project area have steep gradients that do not support bull trout, while any waters downstream of the project area that do support the species would not be affected.

## PROJECT DESCRIPTION

This project entails improvements to Hurricane Ridge Road in Olympic National Park that would occur during the 2005 and 2006 construction seasons. For the purposes of this biological assessment, the Hurricane Ridge Road corridor has been divided into three sections as follows:

- Section I – Hurricane Ridge Visitor Center to the tunnels (Station 932+00 to Station 500+00; Elevation: Approximately 5,200 feet above sea level [ASL] to 2,600 feet ASL);
- Section II – tunnels to the Heart O' the Hills Entrance Station (Station 500+00 to approximately Station 286+00; Elevation: approximately 2,600 feet ASL to 1,750 feet ASL ); and
- Section III – Heart O' the Hills Entrance Station to the intersection with Mount Angeles Road (Station 286+00 to 10+00; Elevation: approximately 1,750 feet ASL to sea level)

These sections comprise the entire length of Hurricane Ridge Road, and total approximately 17.6 miles (figure 1). It is anticipated that road work in Sections I and II would begin in March of 2005, and would be completed by September 2005. Road work in Section III would begin in March of 2006 and end by September 2006.

All activities under the proposed project are expected to remain within the existing road prism, as depicted in figure 2. It is anticipated that the construction zone would encompass 5 feet of the fillslopes and foreslopes on each side of the road. Table 6 provides a summary of the anticipated disturbances associated with each element of the project. It also notes whether or not the disturbed area, or a portion thereof, would be reclaimed.

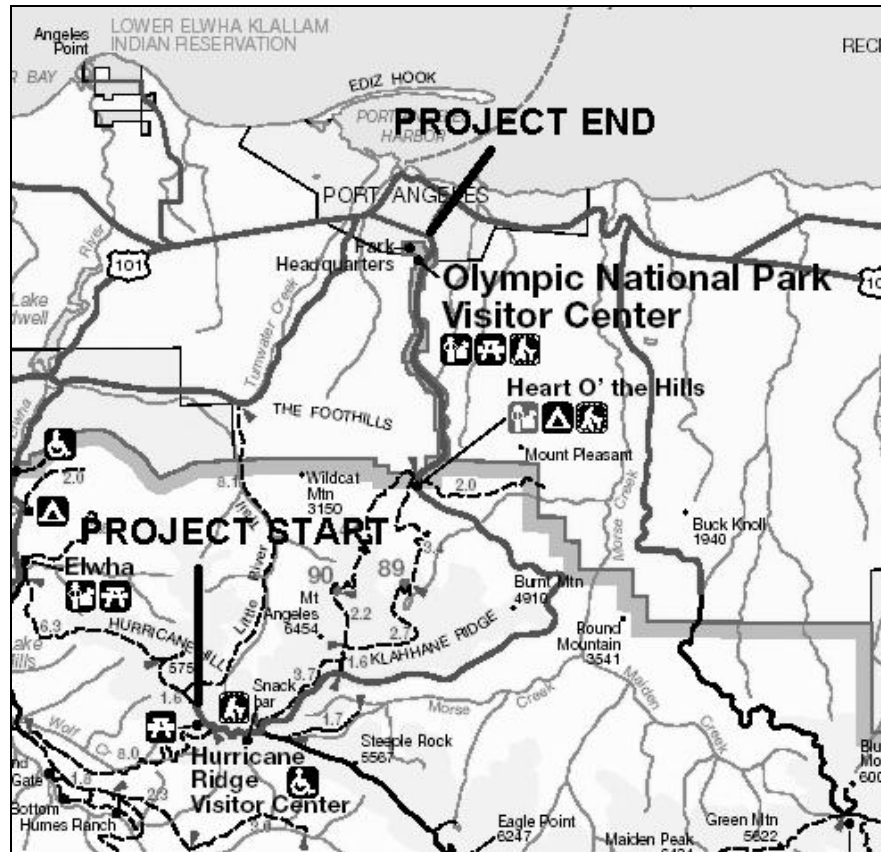


FIGURE 1. HURRICANE RIDGE ROAD PROJECT SITE

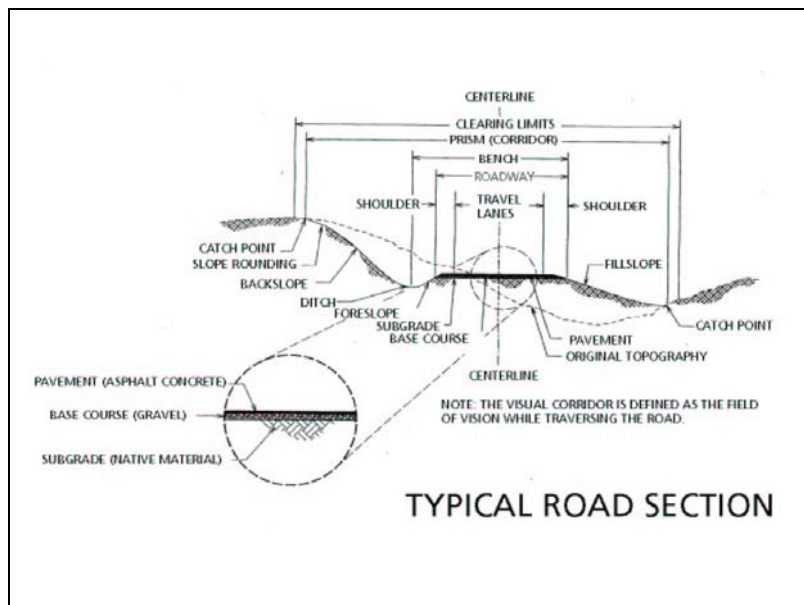


FIGURE 2. TYPICAL ROAD SECTION



## Roadway Improvements, Hurricane Ridge Road – All Sections

Culverts along Hurricane Ridge Road have been in place for approximately 20 years and many are deteriorating. As part of the road rehabilitation, culverts would be examined and cleaned, lined, or recycled and replaced as necessary. The repairs would be designed to allow a 20-year service life, and may require minor shifts in culvert alignments as well as some culvert extensions. With the exception of new drainage structures associated with the reconfiguration of the Mount Angeles Road and Hurricane Ridge Road intersection, no new culverts would be installed.

A recommendation for cleaning, lining, or replacement has been made based on the condition of the culvert, grade of the culvert, and depth of fill over the culvert. The results of these recommendations are presented in detail in the following sections. In addition, there are numerous culverts in Section III that would require the installation of headwalls to prevent damage during maintenance cleaning. The outlets for these culverts would also require placement of riprap on the down-gradient side.



**FIGURE 3. TYPICAL ROAD SHOULDER ALONG HURRICANE RIDGE ROAD BELOW THE ENTRANCE STATION**

For the entire length of the road, which is generally 24- to 26-feet wide, the travel lanes would be repainted from the current 12-foot to an 11-foot width, increasing the available shoulder space in some areas without widening the road (figure 3).

Along the entire length of Hurricane Ridge Road the subgrade would be reshaped for a consistent crown and a 4% maximum superelevation on curves. The subgrade would also be lowered, where necessary, to ensure that the new asphalt width is the same as the existing 24- to 26-foot asphalt top. Much of the roadway would still be higher in elevation than the existing fillslopes and foreslopes. The following techniques would be used to compensate for this elevation difference:

- Acceptable material removed from the subgrade would be blended with the existing fillslope and foreslope material.

- Ditches that are over-steepened would be corrected by grading the foreslope into the edge of the ditch (figure 4).
- Aggregate-soil would be added to the road edge. The aggregate-soil mix may come from material onsite, or may need to be imported from a source approved by the National Park Service.

Subexcavation areas have been selected along the entire length of the road, primarily for locations that indicate local instability (i.e., landslides) or have soft, unstable subgrade. These are described in detail in the following sections.

Due to their deteriorated condition and age, all guardrails in the project area would be replaced or recycled, as needed, with the exception of poorly placed or unnecessary guardrail, which would be removed. Some guardrails would be extended or lengthened for safety considerations.

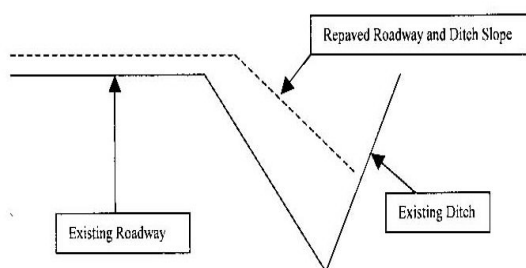


FIGURE 4. ROAD AND DITCH CONFIGURATION

## Roadway Rehabilitation, Section I - Hurricane Ridge Visitor Center to the Tunnels

### Culvert Work

The following table summarizes the culvert treatment recommendations from the Federal Highway Administration for Section I.

TABLE 1. CULVERT TREATMENT RECOMMENDATIONS – SECTION I

Culvert Replacements		PVC Slip Line Culverts
Station	616+33 619+87 848+63	855+64

## Road Work

The existing road prism in Section I of Hurricane Ridge Road typically consists of 12-foot travel lanes with 2-foot paved shoulders and 1-foot gravel shoulders. The fillslope and foreslope in this section generally catch the asphalt shoulder edge. In some areas between the tunnels and the Hurricane Ridge Visitor Center parking area, the existing bench is 1 to 2 feet wider than the rest of the road. This section of the road would be designed for a 20-year life through the following measures:

- placing a 6-inch recycled aggregate base;
- adding a 4-inch new asphalt pavement top, placed in two equal lifts;
- allowing for a 6-inch maximum rise in road elevation; and
- adding a 12-inch wide aggregate-soil / subbase mix to the existing fillslope and foreslope soils to compensate for the rise in elevation.

The paving would occur within the existing travel lanes and shoulders. Prior to repaving, the top 6 inches of asphalt and aggregate base would be recycled through a milling process, where material would be ground and redistributed. The recycled material would be reshaped, adding gravel fill where insufficient material exists to reestablish the crown or to establish the required elevation. The new lifts of asphalt paving would then be placed over the top of the reshaped recycled material. The reshaping of the recycled aggregate base and placing the new pavement would add 3 to 6 inches to the road surface elevation, depending on the necessary thickness to achieve grade. Some blending would be necessary within the paved and gravel shoulders to compensate for the increased thickness. Drainage ditch configurations are oversteepened and the blending would also allow the ditch slope closest to the roadway to be flattened; however, flow would be maintained (see figure 4). An overlay would be placed on the existing asphalt in the Hurricane Ridge Visitor Center parking lot in three segments.

There is one area in Section I that would require subexcavation to improve roadway stability. The area between Stations 502+20 and 503+00 would be excavated approximately 4 feet, geofabric (net-shaped synthetic polymer-coated fibers that are used to reinforce earth-fill slopes) would be installed, and shot rock may be overlain as a geofabric reinforcement. The subexcavation would only be required in the left lane, and would be completed from the centerline to the outslope.

The sidewalk and guardrail at the parking area near Station 620+80 is presently located on a downhill slope that has eroded, resulting in a steep drop-off. The sidewalk and guardrail would be moved or relocated to the uphill end of the parking area. In addition, the entire parking area would be reconfigured to realign all features on the uphill end to prevent further damage from erosion, and curbing would be replaced; however, disturbances would not extend beyond the existing footprint.

Forty-seven turnouts occur in this section of Hurricane Ridge Road; 25 are paved and 22 are gravel. The turnouts represent pull-off areas large enough to accommodate one to two vehicles that would allow slower moving vehicles to move out of the line of traffic and to provide informal recreational opportunities. The paved turnout at Station 858+24 would be scaled back and the previously disturbed area reclaimed and revegetated. In addition, gravel turnouts at Stations 630+36 and 699+68 would be paved.

## Roadway Rehabilitation, Section II - Tunnels to the Heart O' the Hills Entrance Station

### Culvert Work

Table 2 summarizes the culvert treatment recommendations from the Federal Highway Administration for Section II.

**TABLE 2. CULVERT TREATMENT RECOMMENDATIONS – SECTION II**

Culvert Replacements		PVC Slip Line Culverts
Station		308+95
		315+81
	292+80	346+13
	374+16	348+63
	477+99	350+78
		367+82
		380+73

### Road Work

The existing road prism in Section II of Hurricane Ridge Road typically consists of 12-foot travel lanes with 2-foot paved shoulders and 1-foot gravel shoulders. The fillslope and foreslope in this section generally catch the asphalt shoulder edge. In some areas between the tunnels and the Heart O' the Hills Entrance Station, the existing bench is 1- to 2-feet wider than the rest of the road. This section of the road would be designed for a 20-year life through the same measures identified for Section I. Paving would also occur as described for Section I.

Subexcavation of Hurricane Ridge Road to improve stability in Section II would occur in several locations. The landslide area between Stations 326+50 and 342+50 would be drained through the installation of a sheet drain. The drain installation would involve excavating approximately 3 feet below the road surface for the full width of the road, installing geofabric, and possibly overlaying shot rock as a geogrid reinforcement to promote better drainage in the slide area. The sheet drain would emerge on the downhill side of the landslide area, and drainage would be directed away from the slide. Once completed, the excavated outslope area would be revegetated.

The parking area at Station 478+25, located in a landslide area, would be reconfigured to remove weight from the landslide. Eight parking spaces would be eliminated on the north end of the parking area. The south end of the parking area would be expanded to provide two new spaces, while the angle of spaces on the north end would be reconfigured to provide additional parking. The current island separating the parking area from the road would be narrowed to allow new entrance and exit lanes, and curbing would be established. Additional treatments considered for the north end of this parking area would include removing a wedge of material up to 10-feet in depth, and improving drainage to reduce weighting and wetting of the slide. Other subexcavation areas in Section II are summarized in table 3.

**TABLE 3. ADDITIONAL SUBEXCAVATION AREAS OF HURRICANE RIDGE ROAD – SECTION II**

Station Limits	Excavation Depth (Below Base Course)	Geofabric Separator	Geofabric Reinforcement	Full-Width or Left Lane Subexcavation
303+15 to 304+00	3 feet	Yes	No	Left Lane
308+80 to 312+75	3 feet	Yes	To Be Determined	Left Lane
379+00 to 381+00	3 feet	Yes	Yes	Full-Width
382+30 to 383+60	3 feet	Yes	Yes	Full-Width
426+50 to 430+00	3 feet	Yes	Yes	Full-Width
451+00 to 452+80	3 feet	Yes	Yes	Full-Width

Five turnouts occur in this section of Hurricane Ridge Road, and all are paved. The paved turnout at Station 435+80 would be scaled back and the previously disturbed area reclaimed and revegetated.

### **Roadway Improvements, Section III - Heart O' the Hills Entrance Station to the Intersection with Mount Angeles Road**

#### Culvert Work

Table 4 summarizes the culvert treatment recommendations from the Federal Highway Administration for Section III.

**TABLE 4. CULVERT TREATMENT RECOMMENDATIONS – SECTION III**

Station	Install Concrete Headwalls	
	506+80	651+11
	511+03	671+34
	535+12	679+46
	537+76	686+00
	553+26	696+04
	558+09	701+12
	563+98	704+15
	570+66	734+51
	576+23	755+40
	580+77	760+64
	585+28	771+90
	613+48	772+98
	630+60	813+38
	635+31	835+63
	639+11	864+89
	644+81	926+80

#### Road Work

In this section of Hurricane Ridge Road, the prism typically consists of 12-foot wide travel lanes and paved shoulders as narrow as 1 foot, and no gravel shoulders (see figure 3). The fillslope and foreslope in this section generally catch the existing edge of the asphalt shoulder

with little, if any, additional gravel shoulder. This section would be designed for a 20 year life through the following measures:

- placing a 3-inch recycled in-place pavement
- adding a 3-inch new asphalt pavement top
- allowing for a 3-inch maximum rise in road elevation
- adding a 9-inch wide aggregate-soil / subgrade mix to the existing fillslope and foreslope soils to compensate for the elevation rise

Paving would occur within the existing travel lanes and shoulders. Prior to repaving, the top 3 inches of existing asphalt pavement would be recycled through a milling process, in which it would be ground and laid back down in place. A new 3-inch layer of pavement would then be placed over the top of this recycled material. The recycling of the existing asphalt pavement and placing the new paving would add approximately 3 inches to the road surface elevation.

Widening the shoulders by narrowing the travel lanes would allow blending to occur on disturbed areas (e.g., the existing shoulders and roadway), minimizing the potential for additional impacts while achieving the necessary blending. Where necessary, the road crown would be reestablished to promote better drainage.

Between Stations 210+00 and 214+50 is a landslide area that would be stabilized. In this area, the outer traffic lane would be excavated to a depth of approximately 6 feet and backfilled using fill material with geogrid to create a bench-type structure with more stability. The excavation and geogrid installation would follow a trench, rather than excavating all the way to the out-slope of the treatment area.

There is one other area in Section III that would require subexcavation to improve roadway stability. The area between Stations 256+50 and 259+50 would be excavated approximately 3 feet, and geofabric would be installed. A full-width subexcavation would be required.

An informal, earthen turning lane (figure 5) that has developed near the Heart O' the Hills entrance station at the Lake Angeles/Heather Park trailhead access road (a result of vehicles turning into Lake Angeles/Heather Park trailhead when traffic is backed up at the entrance station) would be widened and paved.

The paved employee parking area above the Heart O' the Hills entrance station has been informally expanded by parking vehicles on the flat, earthen area adjacent to the formal, paved parking. This informal parking area would be formalized through paving and curbing.



**FIGURE 5. INFORMAL EARTHEN TURNING LANE AT HEART O' THE HILLS ENTRANCE STATION**

Six turnouts occur in this section of Hurricane Ridge Road; five are paved and one is gravel. The paved turnout at Station 208+16 and the gravel turnout at Station 265+95 would be scaled back and the previously disturbed area reclaimed and revegetated.

### **Roadway Improvements at Hurricane Ridge Road and Mount Angeles Road Intersection**

The Hurricane Ridge Road and Mount Angeles Road intersection would be reconfigured (figure 6) so that the primary traffic flow is onto Hurricane Ridge Road. Currently, the intersection is confusing; many park visitors miss the turn for Hurricane Ridge Road and enter a residential neighborhood. The changes to the intersection would include signage to help clarify the route to Hurricane Ridge Road, and reconfiguration to direct visitors to Hurricane Ridge.

### **Construction Schedule**

Table 5 summarizes the anticipated project schedule and equipment types (including noise levels) for rehabilitating Sections I and II of Hurricane Ridge Road during the 2005 construction season. Improvements in Section III, as well as the reconfiguration of the intersection with Mount Angeles Road, would occur in 2006, but are not considered further as there are no threatened or endangered species concerns in these areas (see discussion of Threatened Species Considered in Detail).

Table 6 provides an acreage estimate of disturbed and reclaimed areas associated with rehabilitation of Hurricane Ridge Road.

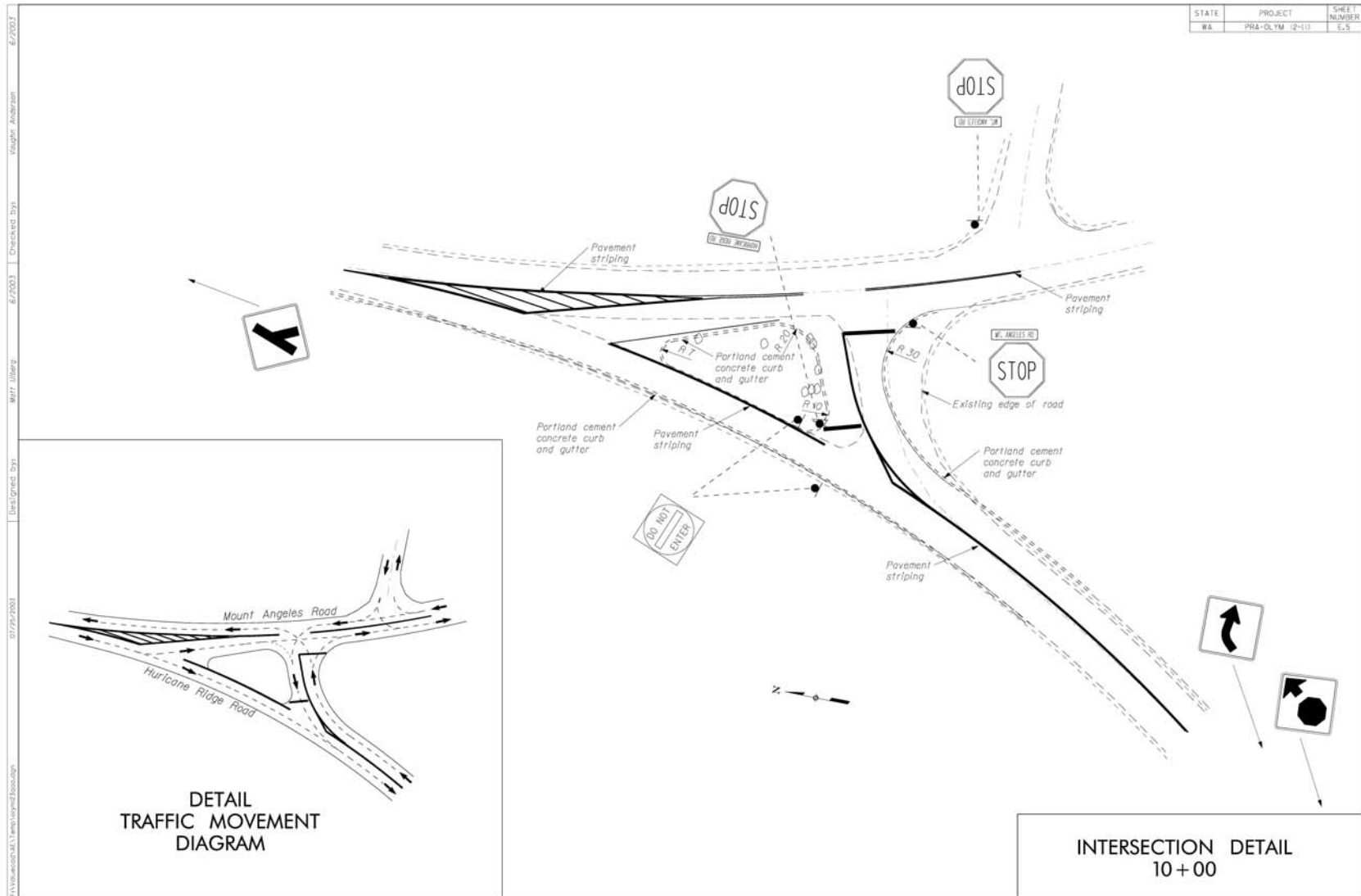


FIGURE 6. HURRICANE RIDGE ROAD / MOUNT ANGELES ROAD INTERSECTION PROPOSED RECONFIGURATION



TABLE 5. ANTICIPATED CONSTRUCTION SCHEDULE AND EQUIPMENT USE

Construction Activity	Duration	Estimated Time Frame for Completion	Anticipated Equipment Use <sup>1</sup>	A-Weighted Noise Level (dB) at 50 Feet <sup>2</sup>	Comments
Establish erosion control for project	17 days (non-continuous)	Throughout Construction Season	Trucks	70 to 96 dB	Includes establishment of temporary turf, installation of silt fences, check dams, sediment traps, etc., as well as watering for dust control.
			Pumps	70 to 80 dB	
			Backhoes	72 to 96 dB	
Culvert Work	17 days (non-continuous)	Throughout Construction Season	Backhoes	72 to 96 dB	Includes culvert replacements and in-place slip lining, cleaning, and installation of concrete headwalls.
			Trucks	70 to 96 dB	
			Concrete Mixers	72 to 91 dB	
			Jackhammers	76 to 98 dB	
Site Preparation	16 days (non-continuous)	Throughout Construction Season	Backhoe	72 to 96 dB	Includes removal of trees, road signs, asphalt/concrete curbs, guardrail, pavement, sidewalks.
			Trucks	70 to 96 dB	
			Jackhammers	76 to 98 dB	
			Saws	69 to 82 dB	
Subexcavation/Geotextile Installation	45 days (non-continuous)	Mid March to End of June	Front Loaders	72 to 98 dB	
			Backhoes	72 to 96 dB	
			Trucks	70 to 96 dB	
			Jackhammers	76 to 98 dB	
Grading/Recycle Aggregate Base, 6" depth	90 days (non-continuous)	Early May to End of August	Cold Asphalt Planar (asphalt milling machine) <sup>3</sup>	70 to 87 dB	The lower sections will be completed later in the season.
			Front Loaders	72 to 98 dB	
			Scrapers, Graders	76 to 96 dB	
			Trucks	70 to 96 dB	
			Compactors (Rollers)	72 to 88 dB	
Hot Asphalt Concrete Pavement, Class B, Grading C, Type I pavement conditions	40 days (non-continuous)	Early August to End of September	Pavers	82 to 94 dB	The lower sections will be completed later in the season.
			Backhoe	72 to 96 dB	
			Compactors (Rollers)	72 to 88 dB	
			Trucks	70 to 96 dB	
Tack Coat Grade CSS-1	40 days (non-continuous)	Early August to Mid September	Trucks	70 to 96 dB	
Establish Curb, Gutter, Sidewalks	37 days (non-continuous)	Throughout Construction Season	Backhoes	72 to 96 dB	
			Trucks	70 to 96 dB	
			Concrete Mixers	72 to 91 dB	
			Compactors (Rollers)	72 to 88 dB	
Guardrail Installation	15 days (non-continuous)	Throughout Construction Season	Trucks	70 to 96 dB	
			Concrete Mixers	72 to 91 dB	
			Pile Driver/Post Hole Digger	89 to 106 dB	
			Backhoes	72 to 96 dB	
Permanent Traffic Control	32 days (non-continuous)	Throughout Construction Season	Trucks	70 to 96 dB	Includes installation of signs, delineators, marking pavement.
			Backhoes	72 to 96	
			Pile Driver/Post Hole Digger	89 to 106 dB	
			Concrete Mixers	72 to 91 dB	

BIOLOGICAL ASSESSMENT

Construction Activity	Duration	Estimated Time Frame for Completion	Anticipated Equipment Use <sup>1</sup>	A-Weighted Noise Level (dB) at 50 Feet <sup>2</sup>	Comments
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<sup>1</sup>Source: Harris 1979, with the exception of the noise data for the Cold Asphalt Planar (asphalt milling machine).

<sup>2</sup>Refer to table 8 for a listing of noise levels for all construction equipment that may be used during this project.

<sup>3</sup>This information was obtained from Caterpillar Inc. for the Caterpillar PM 565 Cold Planer at 23 feet. The sound levels were recorded when the equipment was stationary, the engine was running at rated engine speed, all controls were in their neutral position, and it was not milling asphalt.

The anticipated construction season is from March 1 through October 31, with actual dates dependent on weather conditions.

**TABLE 6. SUMMARY OF THE APPROXIMATE ACREAGE OF DISTURBED AND RECLAIMED AREAS**

<b>Project Element</b>	<b>Area Disturbed (acres)</b>	<b>Area Reclaimed (acres)</b>
Lane Widening, All Segments	21.5	21.5
Reduce Turnout Size (four)	0	~ 0.3
Pave Existing Gravel Turnouts (two)	< 0.1	0
Improvements at Parking Areas, Stations 476+78 .48 to 479+95.04, and Employee Parking Area	0.2	0.1
Landslide Stabilization, Station 208+16	< 0.2	0.2
Hurricane Ridge Road/Mount Angeles Road Intersection Improvements	0.1	0
Landslide Stabilization/ Drainage Work, Station 355+00	0.5	0.5
Pave Lake Angeles/Heather Park Trailhead Turnoff	< 0.1	0
<b>TOTAL</b>	<b>22.6</b>	<b>22.6</b>



## SITE SPECIFIC INFORMATION

### INTRODUCTION

This section describes the environment that may be affected by the Rehabilitate Hurricane Ridge Road Project as it relates to the three threatened species considered in this biological assessment. Only the natural resource elements relevant to habitat establishment and maintenance are addressed within this biological assessment; other elements are addressed in a broader environmental assessment.

### CLIMATE

Hurricane Ridge Road is located in the rain shadow of the Olympic Mountains, on a peninsula influenced by the mountains and maritime environment. Afternoon temperatures in the warmest summer months average from 65- to 70-degrees Fahrenheit (°F), with night time temperatures as low as 45°F. During the winter months, temperatures are in the 40s and night time readings are usually in the upper 20s to lower 30s. Most of the yearly precipitation (76%) falls during the six months between October 1 and March 31. Only 5% of annual precipitation falls during July and August, creating summer drought conditions, especially in the northeast segment of the Peninsula where Hurricane Ridge Road is located. Most storms gather moisture over the Pacific Ocean, move across the Olympic Peninsula from the southwest, and deposit 140 to 167 inches of rainfall per year in the temperate rain forest valleys west of Hurricane Ridge Road. However, the road project is in an area of Olympic National Park considered to be in a rain shadow that receives less rain than the southwest portion of the park. Sequim, Washington (20-air miles to the east of the Hurricane Ridge Visitor Center), records 17 inches of rainfall in this shadow annually.

### TOPOGRAPHY

The project, as proposed, begins near the Hurricane Ridge Visitor Center where elevations exceed 5,000 feet. The road traverses down steep slopes, past Klahhane Ridge, exiting the park and ending at the intersection with Mount Angeles Road near sea level. This large elevation gradient occurs across approximately 17.6 miles of road.

### VEGETATION

The plant communities surrounding the Hurricane Ridge Road corridor are dominated by coniferous forests that change in species composition with increasing elevation. At lower elevations (up to 2,000 feet), forests are dominated by Douglas-fir (*Pseudotsuga mensiezi*) and western hemlock (*Tsuga heterophylla*), and also support deciduous species such as red alder (*Alnus rubra*) and big-leaf maple (*Acer macrophyllum*) (NPS 2003c, Stewart 1995). Common shrubs include salal (*Gaultheria wouldon*), Oregon grape (*Mahonia repens* subsp.), rose (*Rosa* sp.), and salmonberry (*Rubus spectabilis*). Herbaceous plants include swordfern (*Polystichum* sp.), deerfern (*Blechnum spicant*), twinflower (*Linnaea borealis*), and trillium (*Trillium* spp.) (NPS 2003c).

At mid-elevations (2,000 to 3,600 feet), the montane forests are dominated by Pacific silver fir (*Abies amabilis*) and western hemlock. Douglas-fir may occur as a relict from earlier climatic periods, or in drier areas at these elevations. Associated tree species included western red-cedar (*Thuja plicata*), mountain hemlock (*Tsuga mertensiana*), and Pacific yew (*Taxus brevifolia*). Common shrubs included salal and Oregon grape; common herbaceous vegetation included rosy twisted stalk (*Streptopus roseus*), false lily-of-the-valley (*Maianthemum dilatatum*), deerfern, swordfern, and trillium (NPS 2003c).

The tunnels along Hurricane Ridge Road are located at a transition point for vegetation communities, from the Douglas-fir dominated montane zone to the higher elevation, subalpine zone. Forest communities in the subalpine zone are dominated by subalpine fir (*Abies lasiocarpa*). Subalpine fir, which is found most frequently clustered in groups that dot open, south-facing ridge slopes or in dense stands covering large, protected areas, is often found in association with mountain hemlock. However, mountain hemlock grows best on cool, moist, north- and east-facing slopes protected from strong winds. Another common conifer, although the least abundant, that occurs on Hurricane Ridge in this community is Alaska cedar (*Chamaecyparis nootkatensis*) (NPS 2003c, Stewart 1995). Common shrubs include oval-leaf huckleberry (*Vaccinium ovalifolium*), white rhododendron (*Rhododendron albiflorum*), and mountain ash (*Sorbus* sp.). Herbaceous species include beargrass (*Nolina* sp.) and pyrola (*Pyrola* sp.) (NPS 2003c).

Roadside vegetation along Hurricane Ridge Road consists primarily of non-native shrub. Scot's broom (*Cystisus scoparius*) is the most common non-native species that occupies disturbed roadside habitat in the park, while Robert's geranium (*Geranium robertianum*) is a common non-native forb in the forest understory at Olympic National Park (NPS 2003c). Another non-native, oxeye daisy (*Leucanthemum vulgare*), was also observed along the road during a summer site visit to the project area. Where subalpine fir occurs, roadside vegetation consists of mostly native species, however, some non-natives do occur.

At the landscape level, vegetation within the boundaries of Olympic National Park is very well preserved. Outside of the park boundaries, vegetation patterns are influenced by the fragmentation and direct loss of vegetation that results from logging (figure 7).

## THREATENED SPECIES CONSIDERED IN DETAIL

### Northern Spotted Owl

#### Habitat Assessment

Olympic National Park contains the largest contiguous block of suitable nesting habitat within the listed range of the Northern spotted owl. Critical habitat for the Northern spotted owl was designated on January 15, 1992; however, no critical habitat has been formally designated within Olympic National Park. Although much of the park contains high quality Northern spotted owl habitat, critical habitat was not designated because the national park habitat is protected from adverse effects by virtue of its status. The draft recovery plan for the Northern spotted owl listed a number of threats to the Olympic Peninsula population, including low and declining populations, limited and declining habitat, poor habitat distribution, and predation. Because of extensive habitat loss throughout much of western

Washington, the Olympic Peninsula population of Northern spotted owls is effectively isolated from those occurring in the Cascade Mountains and the Coast Range of Oregon.



**FIGURE 7. CONTRAST IN FOREST CONDITIONS WITHIN AND ADJACENT TO THE OLYMPIC NATIONAL PARK BOUNDARY**

Personnel from Olympic National Park and the National Biological Service have conducted Northern spotted owl surveys in the park since 1985. The most comprehensive inventories and surveys were performed from February 1992 through September 1995, over a total of 72,600 acres or about 10% of the forested acreage in the park. These surveys indicated that Northern spotted owls were seldom found above 3,000-foot elevation on the west side of the park, or above 4,000-foot elevation on the east side of the park. At that time, the estimated number of Northern spotted owl pairs within the forested, interior portion of the Olympic National Park was 229, while an additional 15 to 20 pairs were estimated within the park coastal strip and the Queets corridor (Seaman et al. 1996).

Although structurally suitable habitat for Northern spotted owls is found in immediate

proximity along the entire length of Hurricane Ridge Road, ongoing park surveys indicated that much of this habitat is no longer used for nesting by Northern spotted owls. All habitat below the tunnels is used for nesting by barred owls (*Strix varia*), with only an occasional, dispersing Northern spotted owl using areas above the road (Gremel 2003). No barred owls have been located at the upper two Northern spotted owl sites above the tunnels. These are very “solid” Northern spotted owl sites, both of which are likely to support nesting activity in any year that nesting occurs in Olympic National Park. It should be noted that 2003 was not a nesting year in the park, and it is expected that 2004 and/or 2005 would be years in which nesting does occur (Gremel 2003).

#### Habitat Survey Results

**Hurricane Ridge Road – Above the Tunnels.** The two Northern spotted owl sites above the tunnels are considered to support nesting birds in any nesting year in Olympic National Park. The Cox Valley lower site (2,700- to 3,300-foot elevation) is located below Hurricane Ridge

Road (i.e., on the downslope side of the road, but within about 700 feet. It has been surveyed between one and 11 times annually in most years since 1988, and is considered a very habitable site for Northern spotted owls. The Cox Valley Lower site was surveyed four times in 2003, and a non-nesting pair of Northern spotted owls were observed. At this location, surveyors noted that they could not hear road traffic (Gremel 2003).

The Cox Valley site (3,400- to 3,800-foot elevation; UTM Coordinates: 468500e, 5314500n) is considered the third-most productive site in Olympic National Park. The site is entirely below the road, but within about 1,500 feet. It has been surveyed between one and 11 times annually in most years since 1983. The Cox Valley site was surveyed seven times in 2003, and a single male Northern spotted owl was observed. Surveyors have noted that they can hear louder traffic, such as motorcycles, on the road from the site.

The park does not conduct surveys for Northern spotted owls in the project area above the Cox Valley site because the vegetation does not provide suitable nesting habitat for this species. Transient, dispersing Northern spotted owls may occur above the Cox Valley site, but it is unlikely they would nest in this area.

**Hurricane Ridge Road – Below the Tunnels.** Although structurally suitable habitat for the Northern spotted owl exists in this section of Hurricane Ridge Road, the two most notable sites do not support nesting pairs. The Lake Creek site (1,800- to 3,100-foot elevation), which straddles Hurricane Ridge Road, has been surveyed between one and eight times in most years since 1990. It has never supported a Northern spotted owl nest, although during night and day hoots, both Northern spotted and barred owl individuals can be identified. The Lake Creek site was surveyed seven times in 2003, and a single Northern spotted owl male was observed. Because spotted owls banded at this site have been observed to move to higher elevations, they are considered transients, using the area for dispersal. Even in the years when a pair of Northern spotted owls were observed, they were not located together and did not try to nest.

The Morse Creek site (1,800- to 2,800-foot elevation), which also straddles Hurricane Ridge Road, has been surveyed between one and 15 times annually in most years since 1983. In 1994, this site supported a Northern spotted owl nest; however, since 1997, no nesting Northern spotted owls have been observed. Only barred owl nesting activity has been observed, all below the road, indicating that above the road, nesting habitat is less suitable. One individual, dispersing Northern spotted owl was observed above the road in 2002. In 2003, the Morse Creek site was surveyed nine times and a single Northern spotted owl male was observed.

## **Marbled Murrelet**

### **Habitat Assessment**

The National Park Service conducted marbled murrelet surveys of all developed areas, as well as a sample of wilderness sites, between 1995 and 1999, using the Pacific Seabird Group Inland Survey protocol. Marbled murrelet presence has been documented at 100% of survey sites throughout the park, with occupancy documented at greater than 80% of those sites. Suitable habitat in the park is used more intensively than that surrounding the park (Hall



2000). Therefore, it is reasonable to assume that unsurveyed, suitable habitat in the park is occupied by marbled murrelets.

Critical habitat for the marbled murrelet was designated on May 24, 1996; however, no critical habitat has been formally designated within Olympic National Park. Although high quality marbled murrelet habitat is found throughout the park, critical habitat was not designated because the national park habitat is protected from adverse effects by virtue of its status.

#### Habitat Survey Results

High quality marbled murrelet nesting habitat is found straddling Hurricane Ridge Road from just below the Heart O' the Hills entrance station up to the tunnels. Forested areas below the entrance station are not suitable because of the human disturbance history and the narrow nature of the park lands in this strip. Above the tunnels, a few small pockets of lower quality habitat occur; however, as you move up in elevation the trees become smaller with smaller limbs, limiting potential nesting habitat. From 1997 through 2003, the Heart O' the Hills entrance station was surveyed and found to be occupied. This site consistently has some of the highest murrelet detection rates in Washington, indicating it provides excellent habitat for this species.

### **Bald Eagle**

#### Habitat Assessment

Ninety-nine percent of all bald eagle nests within Washington are located within one mile of a lake, river, or marine shoreline, and eagle foraging is usually associated with large, open expanses of water (Stinson et al. 2001). The number and productivity of bald eagles occupying coastal territories has been steadily increasing over the past decade.

#### Habitat Survey Results

No bald eagle nests or wintering concentrations are known along Hurricane Ridge Road. Individual bald eagles are occasionally seen along the road; however, the project area is not near a suitable water body, a habitat condition commonly required by bald eagles in Washington. Therefore, the Hurricane Ridge Road corridor is not considered suitable for bald eagle use.



## EFFECTS OF THE ACTION

This section provides an analysis of the effects to the Northern spotted owl, marbled murrelet, and bald eagle as a result of the rehabilitation of Hurricane Ridge Road. These species were evaluated for both adverse and beneficial effects, short- and long-term effects, direct and indirect effects, impact intensity, context, and cumulative effects.

Road use would continue to affect the Northern spotted owl and marbled murrelet populations adjacent to the roadway. Based on the project schedule summarized previously, construction-related activities would occur during both the early and late breeding season for the Northern spotted owl and marbled murrelet. During construction, some harassment would occur from the increased levels of human activity, noise, and the ground vibrations produced by vehicles and heavy equipment in the short term. Of these, the noise from construction is anticipated to have the greatest potential to disturb Northern spotted owls and marbled murrelets. The U.S. Fish and Wildlife Service has developed combined injury threshold distances for these species (table 7), with potential injury described as:

1. adult flushing from a nest
2. aborting a feeding attempt
3. postponing a feeding attempt (USFWS 2003a)

**TABLE 7. COMBINED INJURY THRESHOLD DISTANCES FOR MARBLED MURRELETS AND NORTHERN SPOTTED OWLS.**

<b>Activity</b>	<b>Combined injury threshold distances: marbled murrelet / spotted owl</b>
Blast larger than 2 pounds	1 mile / 1 mile
Blast of 2 pounds or less	120 yards / 120 yards
Impact pile driver, a jackhammer, or a rock drill	60 yards / 60 yards
Helicopter or a single-engine airplane	120 yards / 120 yards
Chainsaws (firewood cutting, hazard trees, pre-commercial thinning, and commercial thinning)	45 yards / 65 yards
Heavy equipment	35 yards / 35 yards

Source: USFWS 2003a

Table 8 shows the decibel level for various construction equipment anticipated to be used during the project.

**TABLE 8. CONSTRUCTION EQUIPMENT NOISE LEVELS AT 50 FEET**

Noise Source	A-Weighted Noise Level (dB) at 50 Feet
Compactors (Rollers) <sup>1</sup>	72 to 88 dB
Front Loaders <sup>1</sup>	72 to 98 dB
Backhoes <sup>1</sup>	72 to 96 dB
Scrapers, Graders <sup>1</sup>	76 to 96 dB
Pavers <sup>1</sup>	82 to 94 dB
Trucks <sup>1</sup>	70 to 96 dB
Concrete Mixers <sup>1</sup>	72 to 91 dB
Pumps <sup>1</sup>	70 to 80 dB
Generators <sup>1</sup>	70 to 82 dB
Compressors <sup>1</sup>	68 to 88 dB
Jackhammers, Rock Drills <sup>1</sup>	76 to 98 dB
Pile Drivers (Peak) <sup>1</sup>	89 to 106 dB
Cold Asphalt Planar (asphalt milling machine) <sup>2</sup>	70 to 87 dB
Saws	69 to 82 dB

<sup>1</sup>Source: Harris 1979

<sup>2</sup>This information was obtained from Caterpillar Inc. for the Caterpillar PM 565 Cold Planer at 23 feet. The sound levels were recorded when the equipment was stationary, the engine was running at rated engine speed, all controls were in their neutral position, and it was not milling asphalt.

Use of any of this construction equipment on Hurricane Ridge Road would cause noise levels that could cause exceedance of the combined injury threshold for Northern spotted owls on 541 acres, and for marbled murrelets on 164 acres (see “Incidental Take” section for a detailed description of how these acreages were calculated).

The construction-related noise along Hurricane Ridge Road would not affect nesting bald eagles, as they do not occur in the project area. It is unlikely that bald eagles passing through the project area would be affected by this noise, as they do not spend time in the project area searching for suitable foraging and nesting habitat.

Rehabilitation of the roadway, including asphalt milling, paving the road surface and shoulders, paving the turnouts, and adding concrete curbs, would disturb currently paved or graveled surface areas. New disturbances, associated with the road rehabilitation, drainage improvements in landslide areas, reconfiguration of parking areas, paving of two turnouts, formalization of a turning lane, and reconfiguration of the Mount Angeles Road and Hurricane Ridge Road intersection, would result in the removal of approximately 22.6 acres of roadside vegetation, which consists mainly of non-native species below the tunnels. Most of the disturbance would occur within the existing road prism on previously disturbed lands, and there would be no alteration or loss of Northern spotted owl or marbled murrelet habitat.

Approximately 0.3 acre of this roadside vegetation, mainly non-native plant species, would be permanently lost as a result of paving two gravel turnouts, improving the parking areas, and paving the Lake Angeles / Heather Park trailhead turnoff. Loss of non-native habitat would not affect Northern spotted owls, marbled murrelets, or bald eagles, and would be offset in

the reclamation associated with reducing the size of four pullouts. Following construction, approximately 22.6 acres of disturbed habitat would be restored primarily as a result of: (1) removing non-native species in roadside areas and revegetating with native species; (2) reclaiming landslide disturbances; and (3) scaling back turnouts and revegetating the previously disturbed areas. Overall, there would be no net loss or gain of marbled murrelet or Northern spotted owl habitat. Also, these activities would not affect the bald eagle.

Reconfiguration of the parking area between Stations 476+78.48 and 479+95.04, which is located in a landslide area just below the tunnels, would require the removal of several small trees. The trees to be potentially removed are all less than 20" dbh. Habitat in this section is considered suitable for nesting marbled murrelets and Northern spotted owls. However, the small trees to be removed do not exhibit the old-growth characteristics required for marbled murrelets or Northern spotted owls.

Over the short term, indirect adverse impacts to marbled murrelets could occur from the attraction of corvids (e.g., the common raven) to the project area. Human activities near nesting areas can attract corvids and food or trash made available can help their survival, thereby increasing the chance of predation on nesting marbled murrelets (USFWS 2003b). However, each project employee would be informed of the marbled murrelet presence, its threatened status, and the litter control program to be implemented during construction.

Direct and/or indirect effects to individual Northern spotted owls are not anticipated. The bald eagle would not be affected, directly or indirectly, either at a habitat or individual level. Prey species for the marbled murrelet and bald eagle would not be affected; Northern spotted owl prey (small mammals) would receive some impact, but this would be negligible and temporary.

## **CUMULATIVE IMPACTS**

Past and future actions that could contribute to cumulative effects include development in the Port Angeles area and logging on lands managed by local and state agencies, as well as private citizens. Development and logging increase forest fragmentation and direct removal of forest habitat used by the Northern spotted owl and marbled murrelet. Disturbances caused by human development in low elevation areas have, and would continue to have, a cumulative effect on marbled murrelets and Northern spotted owls through loss of habitat and displacement of individuals. For marbled murrelets, pollution, recreational and commercial boating, and near-shore development in the marine environment degrade such habitat and are expected to continue. Substantial influences of pollution, habitat loss, and direct losses to oil spills and net entanglements are affecting marbled murrelet populations within the marine environment (USFWS 2003b).

## **INCIDENTAL TAKE**

Using guidance presented in the *Biological Opinion and Letter of Concurrence for Effects to Bald Eagles, Marbled Murrelets, Northern Spotted Owls, Bull Trout, and Designated Critical Habitat for Marbled Murrelets and Northern Spotted Owls from Olympic National Forest Program of Activities for August 5, 2003 to December 31, 2008* (USFWS 2003a), calculations of incidental take have been made based on the potential for injury in suitable habitat

surrounding the project area. To estimate the likelihood of injury, the number of presumed occupied, suitable acres within the injury distances (table 7) are estimated. Acreages of suitable habitat where injury could occur were calculated using the following equation:

$$2 \times [(L \times \text{CITD}) / (43,560 \text{ ft}^2/\text{acre})]$$

Where: L = Length of Hurricane Ridge Road Impacted where Species Occurs (in feet)  
CITD = Combined Injury Threshold Distance (in feet, from table 7)

The equation is multiplied by two to calculate acreages of potential injury along both sides of the road. When calculating the acreages for Northern spotted owls, the non-nesting areas along the road were considered suitable habitat. Therefore, based on the habitat survey results described previously, the length of Hurricane Ridge Road from the Heart O' the Hills entrance station to the top (L = 12.4 miles or 65,472 feet) was used for calculating acreage of potential Northern spotted owl injury.

Based on the habitat survey results described previously, when calculating acreages for potential injury to marbled murrelets the stretch of Hurricane Ridge Road between the tunnels and Heart O' the Hills entrance station (L = 3.75 miles or 19,800 feet) was considered suitable habitat.

For purposes of calculating a conservative estimate of acreages where potential injury could occur, it is assumed that a jackhammer, pile driver, or rock drill would be used throughout the project corridor. Therefore, the acreage for potential injury has been estimated as follows:

<b>Acreage for Potential Northern Spotted Owl Injury</b>	$= 2 \times [(L \times \text{CITD}) / 43,560 \text{ ft}^2]$ $= 2 \times [(65,472 \text{ ft} \times 180 \text{ ft}) / (43,560 \text{ ft}^2/\text{acre})]$ <b>= 541 acres</b>
<b>Acreage for Potential Marbled Murrelet Injury</b>	$= 2 \times [(L \times \text{CITD}) / (43,560 \text{ ft}^2/\text{acre})]$ $= 2 \times [(19,800 \text{ ft} \times 180 \text{ ft}) / 43,560 \text{ ft}^2]$ <b>= 164 acres</b>

Although incidental take would occur across 541 acres for the Northern spotted owl, and 164 acres for the marbled murrelet based on these calculations, it is important to note that the incidental take would not result in alteration or loss of habitat for either the Northern spotted owl or marbled murrelet. It is anticipated that a high percentage of individuals of these species at very close distances to the Hurricane Ridge Road corridor could be injured, and that the percentage of affected individuals would decrease with increasing distance. Therefore at the very far ends of the injury threshold, it is assumed that a very small percentage of individuals could be injured (USFWS 2003a).

## CONSERVATION MEASURES

The National Park Service project manager would ensure that the project remains confined within the parameters established in the compliance documents and that mitigation measures are properly implemented. The following discussion relates to those conservation measures that would be implemented that would minimize impacts to threatened and endangered species.

The roadway construction disturbance would be surveyed and staked and marked with construction fencing, tape, snow fencing, or some similar material, as necessary, to clearly identify and limit the area of construction activity. All other construction limits would be staked before the beginning of construction. The contractor is responsible for performing work within the construction limits. All protection measures would be clearly stated in the construction specifications and workers would be instructed to avoid conducting activities beyond the construction zone, as defined by the construction zone fencing. This does not exclude necessary temporary structures such as erosion control fencing.

Construction equipment staging would occur within the roadway for active work areas or at designated turnouts. Construction related offices or laboratories should be located outside of park boundaries.

No blasting would be allowed.

Contractors would be required to properly maintain construction equipment (i.e., mufflers) to minimize noise from use of the equipment.

Construction activities would be phased, beginning at the top of Hurricane Ridge Road (Station 932+00), and working toward the intersection with Mount Angeles Road (Station 10+00). Scheduling would delay construction in areas of occupied marbled murrelet habitat as late in the breeding season as possible, minimizing impacts to this species.

To protect marbled murrelets during sensitive feeding periods, construction activities would not occur two hours before and after sunrise or sunset in the road segment from the tunnels to the intersection during the period of April 1 to September 15.

The contractor would be required to maintain strict garbage control to prevent scavengers (e.g., crows), which are predators on murrelet nests, from being attracted to the project area. No food scraps would be discarded or fed to wildlife.

Contractor would use only approved commercial material sources and disposal sites outside Olympic National Park.

A revegetation plan would be developed to restore disturbed areas.

Ground surface treatment would include grading to natural contours, topsoil replacement, seeding, and planting. This work would occur as soon after the completion of construction as possible.

Reclaimed areas would be monitored after construction to determine if reclamation efforts are successful or if additional remedial actions are necessary. Remedial actions could include installation of erosion control structures, reseeding, and/or replanting the area, and controlling non-native plant species.

In an effort to avoid introduction of non-native/noxious plant species, no imported hay bales would be used during revegetation. On a case-by-case basis the following materials may be used for any erosion control dams that may be necessary: certified weed free rice straw, cereal grain straw that has been fumigated to kill weed seed, and wood excelsior bales.

Undesirable plant species would be controlled in high-priority areas and other undesirable species would be monitored and controlled, as necessary. To prevent the introduction of, and minimize the spread of non-native vegetation and noxious weeds, the following measures would be implemented during construction:

- Minimize soil disturbance.
- Pressure wash and/or steam clean all construction equipment, except hauling vehicles, before entering the park to ensure that all equipment, machinery, rocks, gravel, or other materials are cleaned and weed free before entering Olympic National Park.
- Pressure wash hauling vehicles before entering the park for the first time; subsequent entries would not require pressure washing unless the vehicle shows signs of mud, plant material, or other substances which could be considered harmful.
- Cover all haul trucks bringing asphalt or other fill materials from outside the park to prevent seed transport.
- Limit vehicle parking to within construction limits, existing roadways, parking lots, or the access routes.
- Limit disturbance to roadsides and culvert areas, including limiting equipment to the roadbed area—no machinery or equipment should access areas outside the construction zone.
- Obtain all fill, rock, or additional topsoil from the project area, if possible. If not possible, then obtaining weed-free fill, rock, or additional topsoil from National Park Service approved sources outside the park would be required.
- Initiate revegetation of disturbed sites immediately following construction activities.
- Monitor disturbed areas for up to three years following construction to identify growth of noxious weeds or non-native vegetation. Treatment of non-native vegetation would be completed in accordance with NPS-13, *Integrated Pest Management Guidelines*.

To maximize vegetation restoration efforts after completion of construction activities, the following measures would be implemented:

- salvage topsoil, as well as incidental native vegetation (as feasible), from construction areas for reuse during restoration on disturbed areas
- monitor revegetation success for up to three years following construction, implementing remedial and control measures as needed



## DETERMINATION OF EFFECTS

Impacts to marbled murrelets and Northern spotted owls as a result of this project would be due to human presence and the generation of noise. Use of any construction equipment on Hurricane Ridge Road would create noise levels that could cause exceedance of the combined injury threshold and incidental take for Northern spotted owls on 541 acres, and for marbled murrelets on 164 acres (see Incidental Take section for a detailed description of how these acreages were calculated). It is important to note that the incidental take would not result in alteration or loss of habitat for either the Northern spotted owl or marbled murrelet.

New disturbances, associated with the road rehabilitation, drainage improvements in landslide areas, reconfiguration of parking areas, paving of two turnouts, formalization of a turning lane, and reconfiguration of the Mount Angeles Road and Hurricane Ridge Road intersection, would result in the removal of approximately 22.6 acres of roadside vegetation, which consists mainly of non-native species below the tunnels. Most of the disturbance would occur within the existing road prism on previously disturbed lands. Approximately 0.3 acre of this roadside vegetation, mainly non-native species, would be permanently lost. Loss of non-native habitat would not affect Northern spotted owls, marbled murrelets, or bald eagles and would be offset in the reclamation associated with reducing the size of four turnouts. Also, these activities would not affect the bald eagle.

Several trees would be removed in the reconfiguration of the parking area between Stations 476+78.48 and Station 479+95.04; however, these trees do not provide adequate old-growth characteristics for nesting Northern spotted owls or marbled murrelets.

At the end of the project, approximately 22.6 acres of previously and temporarily disturbed habitat would be revegetated and restored adjacent to the existing roadway, in landslide areas, or in turnouts that are scaled back. Overall, there would be no net loss or gain of marbled murrelet or Northern spotted owl habitat.

Over the short term, indirect, adverse impacts to marbled murrelets could occur from the attraction of corvids (e.g., the common raven) to the project area, resulting in an increase in egg and/or nestling predation. Direct and/or indirect effects to individual Northern spotted owls are not anticipated. The bald eagle would not be affected, directly or indirectly, either at a habitat or individual level. Prey species for the marbled murrelet and bald eagle would not be affected; Northern spotted owl prey (small mammals) may receive impacts due to construction, but this would be negligible and temporary.

Construction-related impacts, including noise generated along Hurricane Ridge Road, would not affect nesting bald eagles because they do not use the project area. It is unlikely that bald eagles passing through the project area would be affected by construction-generated noise. Individual bald eagles would avoid this road reach and continue on to suitable foraging or nesting habitat.

Using guidance on effect determinations prepared by the U.S. Fish and Wildlife Service (2003a and 2003b), the National Park Service has determined that the effects of this rehabilitation project are *likely to adversely affect* the marbled murrelet and Northern

spotted owl. There would be no effect to bald eagles. Considerations for the determination of effects to these species and the likelihood of reducing the species' survival and recovery on the Olympic Peninsula included:

1. The project occupies an existing road corridor that does not experience elevated noise levels.
2. Noise sources (e.g., heavy equipment) would cause incidental take on 541 acres of Northern spotted owl habitat and 164 acres of marbled murrelet habitat.
3. The bald eagle is transient in the area and would not be affected.

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## **APPENDIX A**

### **U.S. FISH AND WILDLIFE SERVICE SPECIES LIST**



**LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CRITICAL  
HABITAT; CANDIDATE SPECIES; AND SPECIES OF CONCERN  
IN THE WESTERN PORTION OF WASHINGTON STATE**

**PREPARED BY:**

**U.S. FISH AND WILDLIFE SERVICE  
WESTERN WASHINGTON FISH AND WILDLIFE OFFICE**

**(Revised December 24, 2002)**

**CLALLAM COUNTY**

**LISTED**

Wintering bald eagles (*Haliaeetus leucocephalus*) occur in the county from about October 31 through March 31.

There are two bald eagle communal winter night roosts located in the county.

There are four bald eagle wintering concentrations located in the county at Lake Ozette, Neah Bay, and along the Washington Coast.

There are 147 bald eagle nesting territories located in the county. Nesting activities occur from about January 1 through August 15.

Brown pelicans (*Pelecanus occidentalis*) occur along the outer coast in the county.

Bull trout (*Salvelinus confluentus*) occur in the county.

Green sea turtles (*Chelonia mydas*) may occur along the outer coast in the county.

Leatherback sea turtles (*Dermochelys coriacea*) may occur along the outer coast in the county.

Loggerhead sea turtles (*Caretta caretta*) may occur along the outer coast in the county.

Marbled murrelets (*Brachyramphus marmoratus*) occur in the county. Nesting murrelets occur from April 1 through September 15.

Northern spotted owls (*Strix occidentalis caurina*) occur in the county throughout the year.

Olive ridley sea turtles (*Lepidochelys olivacea*) may occur along the outer coast in the county.

Short-tailed albatross (*Phoebastria albatrus*) may occur in the county.

Major concerns that should be addressed in your biological assessment of project impacts to listed species include:

1. Level of use of the project area by listed species.
2. Effect of the project on listed species' primary food stocks, prey species, and foraging in all areas influenced by the project.
3. Impacts from project activities and implementation (e.g., increased noise levels, increased human activity and/or access, loss or degradation of habitat) that may result in disturbance to listed species and/or their avoidance of the project area.

## DESIGNATED

- Critical habitat for the Northern spotted owl has been designated in Clallam County.
- Critical habitat for the marbled murrelet has been designated in Clallam County.

## PROPOSED

None

## CANDIDATE

Mazama pocket gopher (*Thomomys mazama* ssp.)(includes ssp. *couchi*, *glacialis*, *louiei*, *melanops*, *pugetensis*, *tacomensis*, *tumuli*, *yelmensis*)  
Whulge (Edith's) checkerspot (*Euphydryas editha taylori*)

## SPECIES OF CONCERN

Aleutian Canada goose (*Branta canadensis leucopareia*)  
California wolverine (*Gulo gulo luteus*)  
Cascades frog (*Rana cascadae*)  
Cassin's auklet (*Ptychoramphus aleuticus*)  
Long-eared myotis (*Myotis evotis*)  
Long-legged myotis (*Myotis volans*)  
Makah's copper (butterfly) (*Lycaena mariposa charlottensis*)  
Northern goshawk (*Accipiter gentilis*)  
Northern sea otter (*Enhydra lutris kenyoni*)  
Olive-sided flycatcher (*Contopus cooperi*)  
Oregon vesper sparrow (*Pooecetes gramineus affinis*)  
Pacific lamprey (*Lampetra tridentata*)  
Pacific fisher (*Martes pennanti pacifica*)  
Pacific Townsend's big-eared bat (*Corynorhinus townsendii townsendii*)  
Peregrine falcon (*Falco peregrinus*)  
Olympic torrent salamander (*Rhyacotriton olympicus*)  
River lamprey (*Lampetra ayresi*)  
Tailed frog (*Ascaphus truei*)  
Tufted puffin (*Fratercula cirrhata*)  
Valley silverspot (*Speyeria zerene bremeri*)

Van Dykes's salamander (*Plethodon vandykei*)

Western toad (*Bufo boreas*)

*Abronia umbellata* ssp. *breviflora* (*acutalata*) (pink sand verbena)

*Astragalus australis* var. *olympicus* (Cotton's milk vetch)





**APPENDIX C**  
**NATIONAL PARK SERVICE PRESS RELEASE**

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National Park Service  
U.S. Department of the Interior

Olympic National Park

600 East Park Avenue  
Port Angeles  
WA 98362

360-565-3000 phone  
360-565-3015 fax

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## Olympic National Park News Release

September 24, 2003

For Immediate Release

Barb Maynes (360) 565-3005

### Olympic National Park Proposes Improvements to Hurricane Ridge Road; Public Input Invited

Olympic National Park is proposing to rehabilitate and resurface 17.6 miles of the Hurricane Ridge Road, from its intersection with the Mt. Angeles Road in Port Angeles to the Hurricane Ridge Visitor Center.

The project would include resurfacing the road, the Hurricane Ridge parking lot and the pullouts along the road. In some areas, the road base may require reconstruction, especially where the road has settled. Also proposed is a reconfiguration of the road's intersection with Mount Angeles Road to reduce confusion and cut down on the number of motorists who miss the turn to Hurricane Ridge.

"The Hurricane Ridge Road receives year-round use, with over 350,000 visits annually," said Superintendent Bill Laitner. "Maintaining safe access for our visitors is vital, particularly to such a popular destination."

The Hurricane Ridge Road was built in the late 1950s and was last resurfaced in the early 1980s. The road has deteriorated over time. The road and adjacent shoulders have settled unevenly in places; ruts and potholes have also developed.

Construction on this proposed project would begin in 2005, continuing in 2006 if necessary.

Interested individuals and groups are invited to offer their thoughts on the types of issues and factors that should be considered as this project is more fully developed. Input received during this initial "scoping" period will be used to help identify concerns to be addressed in an upcoming environmental assessment.

(more)

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EXPERIENCE YOUR AMERICA™

The National Park Service cares for special places saved by the American people so that all may experience our heritage.

Comments should be sent to the following address no later than October 24, 2003.

Superintendent - Hurricane Ridge Road Scoping  
Olympic National Park  
600 East Park Avenue  
Port Angeles, WA 98362

Fax: 360-565-3015  
Email: [olymp\\_ea@nps.gov](mailto:olymp_ea@nps.gov)

For more information, people may call the park superintendent's office at (360) 565-3004.

-- NPS --

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EXPERIENCE YOUR AMERICA™

The National Park Service cares for special places saved by the American people so that all may experience our heritage.



As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historic places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. Administration.

