United States Department of Agriculture

Blue Mountains National Forests
Proposed Revised Land Management Plan








Forest Service

Malheur, Umatilla, and
Wallowa-Whitman National Forests

February 2014

Proposed Revised Land Management Plans for the Malheur, Wallowa-Whitman and Umatilla National Forests

Baker, Crook, Grant, Harney, Malheur, Morrow,
Umatilla, Union, Wallowa, and Wheeler Counties, Oregon
Asotin, Columbia, Garfield, and Walla Walla Counties, Washington

Lead Agency: USDA Forest Service

Cooperating Agencies:

Confederated Tribes of the Umatilla Indian Reservation
State of Oregon
Baker County, Oregon
Grant County, Oregon
Harney County, Oregon
Morrow County, Oregon
Umatilla County, Oregon
Union County, Oregon
Wallowa County, Oregon
Wheeler County, Oregon
Asotin County, Washington
Columbia County, Washington
Garfield County, Washington

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Contents

Tables

Figures

Introduction

Purpose of the Land Management Plan

The land management plan (the "forest plan") is a guide for the future management of natural resources on the Malheur, Umatilla, and Wallowa-Whitman National Forests (also referred to as the "Forest") for the plan period, approximately 10 to 15 years. This plan:

- Is strategic in nature. It does not include project and activity decisions. Those decisions are made later, only after more detailed analysis and further public involvement.
- Is adaptive in that new knowledge and information can be analyzed and the forest plan can be amended, if appropriate, at any time.
- Honors the continuing validity of private, statutory, or preexisting rights.

This forest plan represents a revision of the 1990 Land and Resource Management Plans. The revision was conducted under the legal framework of the National Forest Management Act, and the provisions of the 1982 Planning Rule, as allowed by the 2012 Planning Rule language (36 CFR 219.7(b)(3)).

The forest plan describes the goals and desired ecological, social, and economic conditions of the national forests and provides direction that focuses management activities toward maintaining or achieving those conditions. The goals and desired conditions are designed to contribute to the sustainable stewardship of the nation's national forests, to contribute to local communities, and to meet the Forest Service's responsibility to American Indian tribes in relation to trust responsibilities and treaty resources. For the purposes of commenting on the draft forest plans, the three forest plans have been consolidated into one document. For the most part the plans for each national forest have the same plan components, where there are differences these distinctions are identified.

Forest plan guidance for the management of natural resources is intended to provide a predictable flow of forest products and uses to the public during the life of the plan while maintaining and restoring ecosystems. The Forest Service will contribute to meeting the needs of the present generation without compromising the ability to contribute to meeting the needs of future generations.

The forest plan:

- Provides programmatic guidance
- Provides the basis for subsequent site-specific, project-level decisions made after additional detailed analyses and further public involvement
- Provides a context for future, project-level planning
- Identifies strategies for maintaining or achieving desired conditions and for achieving objectives
- Identifies land areas as generally suitable or generally unsuitable for various uses
- Identifies standards and guidelines to guide project and activity planning and implementation
- Identifies areas with special or unique characteristics Provides monitoring and evaluation requirements
- Emphasizes the use of best available scientific information and adaptive management

Legal Framework

Over time, a framework of laws, regulation, and guiding legislation that works to guide the management of National Forest System lands has been enacted. Legal mandates governing national forest management date back to the Organic Act of 1897, which provided that national forests would be managed for the dual purpose of protecting water flows and providing a continuous supply of timber for the American public. The Multiple Use Sustained Yield Act (1960) provides for the sustainability of the multiple uses of natural resources in ways that best meet the needs of the public while maintaining the long-term productivity of the land for multiple uses and in such a manner that these lands are available to future generations. The magnitude and intensity of any effects are disclosed to the public, and the public has the opportunity to comment on the actions proposed. The National Forest Management Act 1976 and its accompanying legislation guides the creation, revision, and amendment of National Forest Land Management Plans, and the Forest and Rangeland Renewal Resources Planning Act of 1974 directs that the suitability of lands for resource management be identified and a process for the revision of land and resource management plans[1] established. This revision process was conducted under the legal framework of the National Forest Management Act, and the provisions of the 1982 Planning Rule, as allowed by the 2012 Planning Rule language (36 CFR 219.7(b)(3)). NFMA requires forest plans to be revised at least every 10 to 15 years or sooner if warranted by changed conditions. The multiple-use desired conditions and objectives, design criteria (standards and guidelines), and monitoring all work together to define management direction for the three Blue Mountains national forests. However, successful implementation of the management direction and the rate of accomplishment of desired conditions are dependent upon the congressional budget process and other factors.

The National Environmental Policy Act (NEPA) of 1969 requires that all major Federal actions significantly affecting the human environment be analyzed, and the consequences to the quality of the human environment from proposed management actions are to be considered. The regulations implementing the NEPA further require that agencies prepare environmental impact statements concurrent and integrated with environmental analysis and related surveys and studies required by such laws as the Endangered Species Act of 1973, the National Historic Preservation Act of 1966, the Wilderness Act of 1964, and the Wild and Scenic Rivers Act of 1968. Other environmental review laws and executive orders, such as the Clean Air Act of 1977 and the Clean Water Act of 1948 are also considered.

The revised forest plans will continue to honor American Indian reserved rights through consultation and coordination, and will maintain a government-to-government relationship with federal recognized tribal governments.

Additional direction for managing NFS lands comes from a variety of sources, including Executive Orders, the Code of Federal Regulations (CFRs) and the Forest Service directive system, which includes the Forest Service Manual (FSM) and the Forest Service Handbook (FSH). This management direction is generally not repeated in the forest plan.

Appendix D of the associated DEIS lists many of the laws, regulations, executive orders, and other guiding direction for the scope and content of analysis for each section of chapter 3. Additionally, the “Legal and Regulatory Framework” section in chapter 1 provides more details

[1] Note the term “land and resource management plan” comes from the 1982 Planning Rule. The term has been revised to “land management plan” in the 2012 Planning Rule (see the transition provisions at 36 CFR 219.17 (b)(3)).

regarding the relationship between this planning effort and national, regional, forestwide and landscape scale planning efforts.

Decisions of a Forest Plan

Planning for National Forest System units involves two levels of decisions. First is the development of a forest plan that provides direction for the resource management of the entire planning unit. Forest plans provide forestwide and management area standards and guidelines for future decision making and are adjustable through amendment and revision. Forest plan management area and forestwide direction are the "zoning ordinances" under which future decisions are made. Forest plan approval establishes multiple-use goals, desired conditions, and objectives for the planning unit. Forest plan level actions are approval (16 USC 1604(d) and (j), amendment (16 USC 1604(f)(4)) and revision (16 USC 1604(f)(5)).

Forest plan approval results in:

1. Establishment of desired conditions and national forest multiple-use goals and objectives (1982 rule provision 36 CFR 219.11(b))
2. Establishment of standards and guidelines that apply to future activities (1982 rule provision 36 CFR 219.13 to 219.27)
3. Establishment of management areas and management area direction that applies to future activities in that management area, including the suitability of lands for resource management (16 USC 1606(g)(2)(A) and 1982 rule provision 36 CFR 219.11(c))
4. Designation of suitable timber land (16 USC 1604(k) and 1982 rule provision 36 CFR 219.14) and establishment of allowable timber sale quantity (16 USC 1611 and 1982 rule provision 36 CFR 219.16)
5. Recommendation to Congress of areas eligible for wilderness designation as required (36 CFR 219.17) and rivers eligible for inclusion in the National Wild and Scenic Rivers System as required (16 USC 1271-1287, 36 CFR 297, and 47 FR 39454)
6. Establishment of monitoring and evaluation requirements (1982 rule provision 36 CFR 219.11(d))

For the Wallowa-Whitman National Forest, forest plan approval would complete the two wild and scenic rivers suitability analyses. Additionally, the 2003 Hells Canyon National Recreation Area Comprehensive Management Plan is being carried forward without modification and will continue to be a part of the forest plan for the Wallowa-Whitman National Forest.

The second level of planning involves the analysis and implementation of management practices designed to achieve the goals, desired conditions, and objectives of the forest plan. Projects and activities are proposed, analyzed, and carried out within the framework of the forest plan and must be consistent with it. This second level involves site-specific analysis to meet NEPA requirements for decision making. The Blue Mountains forest plan revision does not include this second level of decision making.

Equally important to the decisions being made is the identification of the types of decisions that will not be made within the revised forest plans. Project decisions are not authorized, carried out, or funded by forest plan approval, amendment, or revision, except as specifically authorized and documented in the record of decision.

The designation of routes, which include both roads and trails, or areas for motor vehicle travel is not being made during this forest plan revision. Some issues, although important, are beyond the authority or control of the Forest Service and will not be considered.

Decision Criteria

Decision criteria were identified by the forest supervisors for the Blue Mountains national forests and approved by the regional forester. These criteria will be used to evaluate the alternatives and determine which alternative ultimately will be selected:

- Meeting all applicable laws and regulations and be aligned with Forest Service policy
- Determining the balance between meeting the purpose and need with addressing the significant issues raised during the NEPA process
- Providing a mix of benefits to address the needs for change by:
    - Leading to more resilient and sustainable terrestrial ecosystems
    - Accelerating improvement of watershed and aquatic/riparian conditions
    - Restoring and maintaining scenery, cultural and recreation resources, treaty resources, and wildland urban interface
- Minimizing conflicts between revised forest plans and travel management decisions
- Maintaining or enhance biological diversity and the long-term health of the national forests
- Contributing to economic and social needs of people, cultures, and communities

Best Available Science

What constitutes best available science might vary over time and across scientific disciplines. As a general matter, we show consideration of the best available science when we insure the scientific integrity of the discussions and analyses in the project NEPA document. Specifically, the NEPA document should identify methods used, reference scientific sources relied on, discuss responsible opposing views, and disclose incomplete or unavailable information, scientific uncertainty, and risk. See 40 CFR 1502.9 (b), 1502.22, and 1502.24.

The Forest Service has a long history of science-based decision-making. Using scientific information in planning provides the responsible official with the knowledge, methods, and expert review needed to make an informed decision. To ensure that land management planning decisions help contribute to sustainable stewardship and ecological integrity of the nation's national forests, the agency has taken into account the best available scientific information pertaining to the economic and social conditions and ecosystem composition, structure, and function. In addition to other research, the scientific studies conducted by the Interior Columbia Basin Ecosystem Management Project (ICBEMP) (Quigley et al. 1996, Quigley et al. 1997) were considered in the development of this forest plan.

Organization of the Forest Plan

This plan is organized in several parts: an Introduction, Part 1—Vision, Part 2—Strategy, and Part 3—Design Criteria. The parts of the plan and their associated plan components are described in the following text.

Forest Plan Components

The proposed draft revised plan includes “plan decisions” and “other content”. There is an important distinction between plan components and other elements of the plan. Plan components may only be changed by plan amendment, revision, or administrative correction (FSM 1920 and FSH 1909.12). A change to other content may be made using an administrative correction process, whereby nonsubstantive errors, such as misspellings or typographical mistakes, are corrected, or information (e.g., data and maps), is updated. The public is notified of all plan amendments and administrative corrections before they become effective.

Other elements of the forest plan that are not plan components provide information and/or background material integral to successful implementation of the forest plan. This information may be changed by the approving official without a formal process.

Plan components consist of goals and desired conditions, standards, guidelines, objectives, special areas, management areas, suitable uses and activities, and monitoring and evaluation.

Goals create the framework for the plan. Under each goal, there is a set of desired conditions, standards, guidelines and objectives. The goals and desired conditions are a set of interrelated ecological, social, and economic conditions. The Forests will manage the land and resources of the planning area to achieve or maintain the goals and desired conditions; allowing the national forests to contribute to a range of outcomes now and in the future. This emphasis on integration of the goals and desired conditions promotes an adaptive and active management philosophy, including working with partners, to accomplish this vision for the Blue Mountains.

The following goals and desired conditions explain the conditions, processes, and relationships that the Forest Service will seek to achieve. Some conditions may already exist. Some are achievable during the life of the forest plan. Others may take a longer period, possibly decades. Making progress toward achieving the goals and desired conditions will depend on funding and program direction provided by higher levels in the agency and Congress, as well as natural events.

Each desired condition is associated with a brief background description and a brief existing condition description of each indicator, and statement of scale. Provided as information only, the background and existing condition descriptions are not plan direction.

Management actions that cause movement away from achieving goals and desired conditions in the short term are acceptable as long as the forests achieve or maintain the desired conditions in the long term.

Many desired conditions were derived from national fire regime condition class (FRCC) information, vegetation dynamics development tool (VDDT) modeling (ESSA Technologies Ltd. 2005), national Landfire modeling, collaborative workshops, and professional experience informed by estimates of historic range of variability (HRV).

Desired conditions set forth the desired social, economic, and ecological attributes of the three National Forests. They attempt to paint a picture of what we (the public and Forest Service) desire the forests to look like and/or the goods and services we desire them to provide. Desired conditions are broad expressions in general terms and are timeless in that there is no specific date by which they are to be completed. Desired conditions may only be achievable over a long timeframe (in some cases, several hundred years). In some cases, a desired condition matches the

current condition, and the goal is to maintain it. Desired conditions are aspirations and are not commitments or final decisions to approve projects.

To be consistent with the desired conditions of the plan in assessing a project or activity, at the appropriate spatial scale described in the plan (e.g., landscape scale), each project or activity must be designed to meet one or more of the following conditions:

- Maintain or make progress toward one or more of the desired conditions of a plan without adversely affecting progress toward, or maintenance of, other desired conditions; or
- Be neutral with regard to progress toward plan desired conditions; or
- Maintain or make progress toward one or more of the desired conditions over the long term, even if the project or activity would adversely affect progress toward or maintenance of one or more desired conditions in the short term; or
- Maintain or make progress toward one or more of the desired conditions over the long term, even if the project or activity would adversely affect progress toward other desired conditions in a negligible way over the long term.

The project documentation should explain how the project is consistent with desired conditions and describe any short-term or negligible long-term adverse effects the project may have on the maintenance or attainment of any desired condition.

The desired conditions may apply at a forestwide scale, but many apply at a particular scale, such as at the subbasin, watershed or subwatershed. A subbasin refers to a 4th-level Hydrologic Unit Code (HUC), which is generally about 450,000 acres in size. A watershed refers to a 5th-level HUC, which generally range from 40,000 to 250,000 acres in size. A subwatershed refers to a 6th-level HUC, which generally ranges from 10,000 to 40,000 acres in size.

Objectives are concise, time-specific statements of measurable planned results that make progress towards or maintain desired conditions. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving desired conditions. The objectives represent just some of the expected outcomes or actions required for the Forest to make progress towards desired conditions. The plan only identifies the primary objectives (actions) that the three National Forests will initiate.

Variation in achieving objectives may occur during the life of the plans because of changes in environmental conditions, available budgets, and other factors. Influences on objectives include recent trends, past experiences, anticipated staffing levels, and budget projections.

A project or activity is consistent with the objectives of the plan if it contributes to or does not prevent the attainment of any desired conditions that apply to it. The project documentation should identify any applicable objective(s) to which the project contributes and document that the project does not prevent the attainment of any objectives. If there are no applicable objectives, the project must be consistent with the objectives decisions of the plan, and the project document should state that fact.

Standards are constraints upon project and activity decision making. The design of projects and activities absolutely must meet the standard requirement. A project or activity is consistent with a standard when its design is in accord with the explicit provisions of the standard; a plan amendment is the only way to vary from a standard.

Guidelines are components with which a project or activity must be consistent, in either of two ways:

- The project or activity is designed exactly in accord with the guideline; or
- The project or activity design varies from the exact words of the guideline, but is as effective in meeting the purpose of the guideline to contribute to the maintenance or attainment of the relevant desired conditions and objectives.

The design of projects and activities must follow guideline requirements; however, modification may occur for a specific project if the intent of the guideline is followed and the deviation is addressed in a decision document with supporting rationale. When deviation from a guideline does not meet the original intent, however, a plan amendment is required.

Special areas are lands that have designations by Congress or another delegated authority. Special areas are designated because of their unique or special characteristics. Special areas establishment may occur at the national level either through legislation (Congressional designation) or at the regional or local level through administrative action (administrative designation). The forest plan may recommend the establishment of new special areas. This plan provides direction for the following special areas: scenic byways and All-American roads, national designated trails, eligible and suitable wild and scenic rivers, scenic areas, botanical areas, geological areas, historical areas, Starkey experimental forest and range, research natural areas, and recommended and designated wilderness and wilderness study areas.

Where the plan provides plan decisions specific to a special area, a project or activity must be consistent with those area-specific decisions. The project documentation should describe how the project or activity is consistent with the area-specific decisions of the plan. Special areas are described in detail in Part2—Strategy.

Management areas are spatially distinct areas with a unique set of plan components. The management areas range along a continuum from little development by humans in MA 1A to extensive human development in MA 5. The types of uses and desired settings define the land use that would occur in them under the revised forest plans. They occur across districts, mountain ranges, and ecosystems but have commonalities that make their overarching land uses similar. Management areas are described in detail in Part2—Strategy.

Suitability describes the appropriateness of applying certain resource management practices (uses) to a particular area of land. A unit of land may be suitable for a variety of individual or combined uses.

A project with the purpose of timber production may only occur in an area identified as suitable for timber production [16 U.S.C. 1604(k)]. The documentation for the project should confirm the project area meets the suitability requirements.

Except for projects with a purpose of timber production, a project or activity can be consistent with plan suitability determinations in either of two ways:

- The project or activity is a use identified in the plan as suitable for the location where the project or activity is to occur; or
- The project or activity is not a use identified in the plan as suitable for the location (the plan is silent on the use or the plan identifies the use as not suitable), but the responsible official determines that the use is appropriate for that location’s desired conditions and objectives.

The project documentation should describe that the project or activity is either (1) considered suitable according to the plan, or (2) not considered suitable in the plan but nonetheless appropriate for that location.

Monitoring and evaluation consists of key element monitoring that will occur as implementation of the forest plan progresses (i.e., future site-specific actions). Monitoring is part of an adaptive management process that measures the performance of plan implementation against the goals, desired conditions and objectives to which it aspires. It also evaluates whether implementation of standards and guidelines are producing the desired results.

The following lists plan components and other elements of the forest plan:

Plan Components	**Other Elements of the Forest Plan**
Goals and Desired Conditions	Introduction
Management Areas	Forest Roles and Contributions
Special Areas	Management Challenges
Suitable Uses and Activities	Management Priorities
Objectives	Appendices, Glossary, and References
Monitoring and Evaluation	
Standards	
Guidelines	

Note that goals and desired conditions are brief background and existing condition descriptions that precede the desired conditions and scale statements. The background and existing condition descriptions provide context and are not plan components.

Part 1—Vision

This part of the document provides the context for managing the three national forests by discussing Forest Service roles and challenges and the goals and desired conditions that the Forest Service will work to achieve or maintain across the landscape. The other elements included in Part 1 are:

- **National forest roles and contributions:** this section describes the roles, contributions, and setting that these public lands provide to tribes, local communities, the states of Oregon and Washington, and the Nation.
- **Management challenges:** this section describes the challenges managers face while striving to achieve or maintain the goals and desired conditions.

Part 2—Strategy

The strategy is the guidance for how management activities will be conducted within the Blue Mountains national forests in order to make progress toward achieving or maintaining the goals and desired conditions. It describes the elements necessary for achieving the desired conditions, including special areas, management areas, suitable uses, objectives, and monitoring. The other element included in Part 2 is:

- Management focus: this section describes how the goals and desired conditions and objectives may be applied to guide development of projects and activities on National Forest System lands. These priorities do not limit activities to those types of areas identified, but

guide decision makers to focus activities primarily in those areas with the greatest need for maintenance and restoration.

Part 3—Design Criteria

The design criteria provide the parameters for how future, site-specific activities can occur within the context of the forest plan. This includes the standards and guidelines that provide specific information and guidance for project decision making. Design criteria may also include references to other applicable guidance, such as laws and regulations that are already in place and are not repeated in this plan.

Consistency with Plan Components

As required by NFMA, all projects and activities authorized by the Forest Service must be consistent with the forest plan (16 USC 1604 (i)). This is accomplished by a project or activity being consistent with all applicable plan components.

Project or Activity Consistency with the Forest Plan

Where a project or activity as proposed would not be consistent with any of the six plan components, the responsible official has the following options:

1. Modify the proposal so that the project or activity will be consistent.
2. Reject the proposal.
3. Amend the plan simultaneously with the approval of the project or activity so that the project or activity is consistent with the plan as amended. The amendment may be limited to apply only to the project or activity.

The following paragraphs describe how a project or activity is consistent with plan components and the requirements for documenting consistency.

Management activities are developed specifically to achieve the desired conditions and objectives of the forest plan. To the extent practicable, documentation for such projects should identify the elements of the desired conditions and objectives to be achieved. It should not be expected that all projects or activities would contribute to all desired conditions and objectives, but rather to a limited subset. It should also be recognized that some projects designed to contribute to some desired conditions and objectives may have consequences considered adverse to the achievement of other desired conditions and objectives. In this situation, the responsible official for the project needs to identify and disclose those effects within project documentation and make a decision that balances these considerations.

There are also project activities that are necessary but are not specifically related to one of these elements of the forest plan (e.g., routine road maintenance, facility maintenance, etc.). Such projects should be briefly evaluated to assess if they conflict or impede maintaining or achieving desired conditions and objectives.

In the implementation of the forest plan, projects are expected to comply with the suitability and standards and guidelines direction contained in Part 2—Strategy and Part 3—Design Criteria. Early in the project planning process, the applicable standards and guidelines and suitability considerations should be identified. To ensure compliance with the forest plan, each project should document consistency with applicable standards and guidelines.

Part 1 – Vision

This section describes background information, existing conditions, desired conditions, objectives, scale, and the roles and contributions made by the Blue Mountains national forests at the local, regional, and national levels. The plan revision team engaged in a collaborative effort that included participation from tribes, state, county, and local governments, and a diverse array of public interest groups and nonprofit organizations. Many concepts, research studies, issues, goals, objectives, and strategies were reviewed. The vision was developed by integrating that information with the Forest Service mission, the need for change, the current management situation, and the best available scientific information.

The vision for the national forests of the Blue Mountains is to maintain and restore healthy forests, landscapes, and watersheds. The national forests provide clean air, clean water, productive soils, diverse habitats, recreational opportunities, cultural benefits, quality jobs, and products that support traditional uses, communities, and economies at local, regional, and national levels.

This vision recognizes the historic role that the national forests have played in shaping the environment, cultures, customs, and economies of the Blue Mountains. It also recognizes that the management of the national forests has changed in the last several decades and will continue to change due to a variety of factors. These factors include natural disturbance (wildfire and insects and disease), climate change, and changing public demands. The vision recognizes that social and economic components cannot be separated from ecological systems. People are a part of the ecology of the Blue Mountains and are also an integral part of National Forest System lands. They contribute to the ecology as producers, distributors, users, and stewards. Human roles add complexity to the system. Their roles are essential to the vitality and sustainability of the system.

The vision acknowledges that the Blue Mountains national forests have some areas of unsustainable stand structures, densities, and species composition, which compromise habitats for all living organisms. Forest conditions are such that human contribution is needed in terms of reducing fuels, decreasing stand density, restoring streams, and other activities. Ecological needs can be addressed by human contributions. Addressing ecological needs will, in turn, support social and economic systems, bringing all three closer to sustainability.

Geographical Location

The Malheur (and a portion of the Ochoco administered by the Malheur), Umatilla, and Wallowa-Whitman National Forests include approximately 5.5 million acres in northeastern Oregon and southeastern Washington (figure 1).

The majority of the acreage (4.8 million acres) is in Oregon with about 311,000 acres in Washington.

The Malheur National Forest is comprised of about 1.7 million acres in the southern Blue Mountains with headquarters in John Day and district offices in Prairie City, John Day, and Hines, Oregon. The Malheur National Forest Emigrant Creek Ranger District also administers an adjacent 240,000-acre portion of the Ochoco National Forest. The web address for the Malheur National Forest Web site is http://www.fs.usda.gov/main/malheur/home.

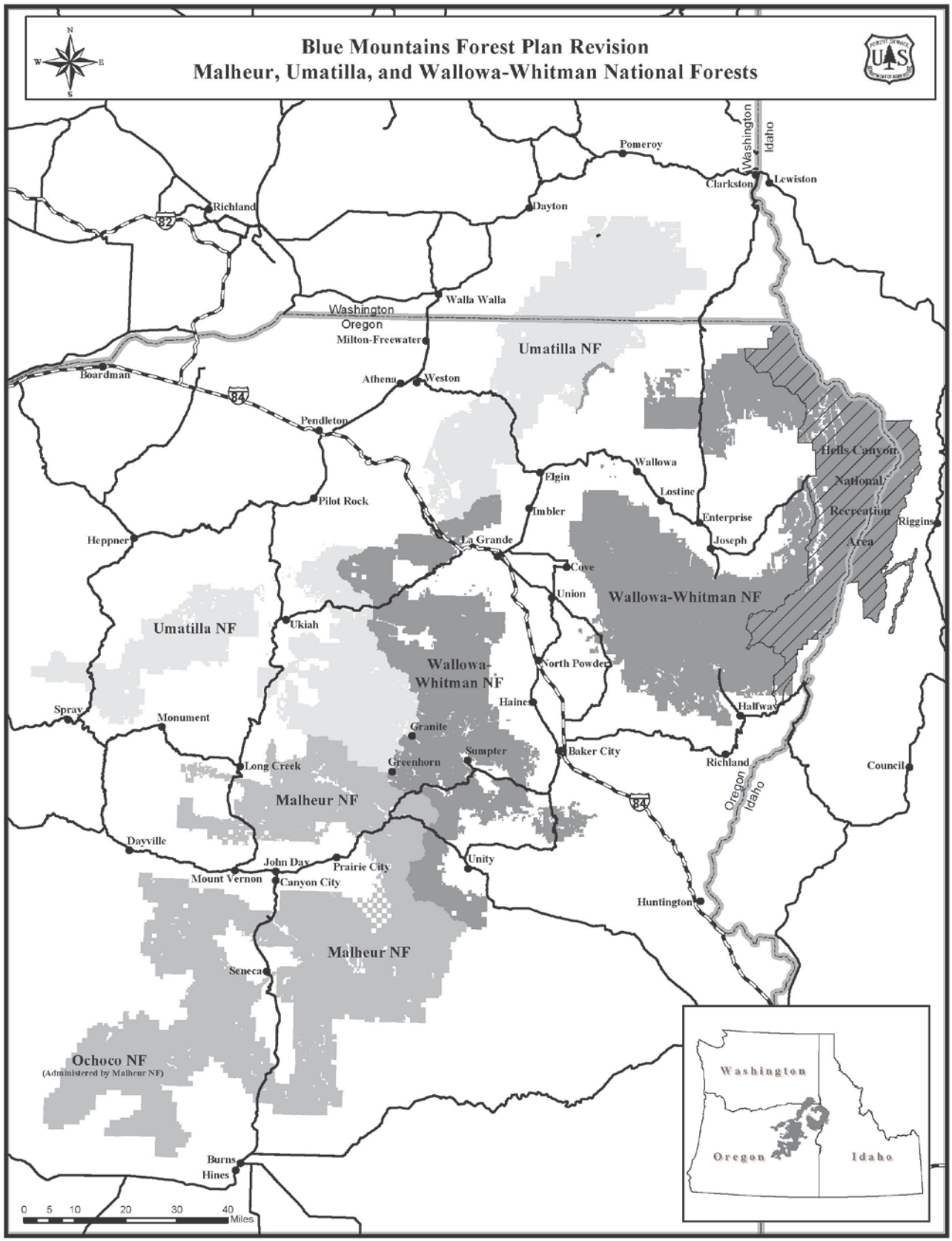

Figure 1. Vicinity map of the Blue Mountains national forests

The 1.4-million-acre Umatilla National Forest straddles the Oregon-Washington border. It is the northern-most national forest in the planning area and is administered from Pendleton, Oregon with district offices located in Pomeroy and Walla Walla, Washington and Heppner and Ukiah, Oregon. The web address for the Umatilla National Forest website is http://www.fs.usda.gov/main/umatilla/home.

Located on the eastern edge of the Blue Mountains, the Wallowa-Whitman National Forest consists of more than 2.4 million acres, which includes the Hells Canyon National Recreation Area in Idaho. This plan, in combination with the Hells Canyon National Recreation Area Comprehensive Management Plan, constitutes an integrated resource management plan for the Wallowa-Whitman National Forest. This plan carries forward in its entirety the Hells Canyon National Recreation Area Comprehensive Management Plan, which guides management on the Hells Canyon National Recreation Area on the Wallowa-Whitman National Forest (USDA Forest Service 2003). See the Legal Framework for further explanation. The headquarters of the Wallowa-Whitman National Forest is in Baker City, Oregon. District offices are located in Baker City, La Grande, and Enterprise, Oregon. The web address for the Wallowa-Whitman National Forest website is http://www.fs.usda.gov/main/wallowa-whitman/home.

The Web site address for the Blue Mountains forest plan revision is http://www.fs.usda.gov/goto/BlueMtnsPlanRevision.

Roles and Contributions of the Blue Mountains National Forests

The highly diverse natural resources of Blue Mountains national forests serve many important ecological, social, and economic functions. This section highlights some of the unique roles and characteristics that the national forests contribute to the local area, state, region, and nation; describes emerging challenges that national forest managers face; and outlines the vision of the national forests. The descriptions are not intended to be comprehensive. Additional information is available in the plan record and the draft environmental impact statement.

Unique Physical and Biological Characteristics

The complex geological history of the Blue Mountains, including floods, volcanic eruptions, landslides, and erosion, has shaped the landscape into a unique combination of landforms and vegetative patterns. The Blue Mountains province contains deep river canyons layered with gently sloping upland benches that are vertically cut by steep, V-shaped drainages.

The area is known for extreme variations in elevations that range from less than 2,000 feet at the bottom of Hells Canyon, the deepest gorge in North America, to nearly 10,000 feet at the top of the Wallowa Mountains in Oregon and the Seven Devils Mountains in Idaho. Rocky outcrops and high peaks of about 9,000 feet protrude along the backbone of the Strawberry, Aldrich, Elkhorn, Wallowa, and Wenaha mountain ranges.

This combination of geology and topography produces a distinctive, mosaic pattern of dense, heavily-forested slopes interspersed with open, rugged herblands. Deep volcanic ash soils contribute to productive forest stands and herblands that provide forage and browse. Sparse, scattered stands of ponderosa pine and junipers dot areas of shallow, rocky soils.

The national forests are at the extreme eastern edge of the Cascade Range’s rain shadow. This produces a combination of high-desert climate with hot, dry summers (less than 10 inches of

precipitation per year) in the lower valleys and moist maritime conditions influenced by the Columbia River at the higher elevations (more than 80 inches of precipitation per year).

This variety of landform, elevation, and climate results in a diversity of plants and animals within the three national forests that ranges from lower to higher elevations: juniper, sage, herblands, ponderosa pine plant communities, mixed conifer, subalpine fir, Engelmann spruce stands, and alpine plants.

Unique plant communities include the Cedar Grove Botanical Area within the Malheur National Forest, which contains the only stand of Alaska yellow cedar east of the Cascade Mountains in the United States. Thirty research natural areas include other unique features, such as the bluebunch wheatgrass of the Pataha within the Umatilla National Forest and the montane sphagnum bog at Duck Lake within the Wallowa-Whitman National Forest.

An individual fungus (*Armillaria ostoyae*), the largest living organism on earth (estimated at 2,385 acres), grows and spreads primarily underground within the Malheur National Forest. Calculations of the age of this fungus vary from about 1,900 years old to greater than 8,600 years old.

The national forests provide habitat for more than 250 native wildlife species, including larger species, such as cougar, black bear, mountain goat, bighorn sheep, deer, pronghorn antelope, gray wolf, and elk, along with a host of smaller birds and animals, such as marten, mink, beaver, badger, bobcat, coyote, river otter, Clark's nutcracker, ruffed and blue grouse, and turkey. The area provides an important wildlife corridor connecting habitats and animal migration routes between the Rocky Mountains and central Oregon.

The Blue Mountains are inhabited by one of the nation's largest herds of Rocky Mountain elk. Cooperative efforts to restore and protect Rocky Mountain elk, as well as bighorn sheep populations, are recognized regionally and nationally.

Streams, rivers, and lakes provide habitat for a variety of native, anadromous fish species. For example, the Imnaha and Grande Ronde river drainages provide the highest upstream spawning areas for Chinook salmon and steelhead trout on the Snake River in Oregon. The John Day River is the second longest undammed river (280 miles) in the contiguous United States and supports four different species of naturally reproducing, native salmonids.

Bull trout are federally listed as threatened across their range. Summer steelhead in the Middle Columbia Basin and in the Lower Snake Basin are also federally listed as threatened. Chinook salmon (both fall and spring/summer) are federally listed in the Lower Snake Basin. Westslope cutthroat and inland redband are also important fish species within the Blue Mountains.

Watersheds also provide clean water for national forest and downstream recreational, municipal, and agricultural uses.

Social and Economic Characteristics

The Blue Mountains have a rich and diverse cultural history of human habitation that spans more than 10,000 years. The national forests are within the ceded boundaries of several American Indian tribes and these tribes maintain strong ties to the national forests. The area plays a significant role in the life and culture of these and other tribes. Numerous archaeological and historical resources that exist within the national forests are important to American Indian tribes,

including special plant locations, traditional hunting and fishing sites, and other traditional use areas.

Many historical uses of the national forests resonate today in the western culture of the area and continue to contribute to the economies of local communities. The national forests still provide trees to contribute to the demands of the American public for lumber, paper, and other wood products. In doing so, they continue to contribute to local economies and communities. The national forests provide unique habitats for wildlife, contribute to healthy watersheds, and provide opportunities for people to experience primitive natural surroundings. Historical sites for this period include remnants of the 1860s gold rush in the John Day River country and traces of railroad logging and company towns in numerous places.

Local ranchers graze cattle on the herblands and forested ranges of the national forests during late spring, summer, and early fall. The Blue Mountains encompass one of the most extensively mineralized areas in Oregon. Gold and other valuable minerals still exist beneath the land's surface and are still available for prospecting in accordance with mining laws. The area's residents enjoy rural lifestyles and amenities associated with the national forests. Many maintain a strong commitment to continuing to actively manage the national forests to contribute to forest health, social well-being, and economic vitality.

American Indian tribes continue to practice their traditional hunting, gathering, and religious activities within the national forests. They gather culturally important plants and find spiritual renewal in sacred areas. Their activities also depend on the maintenance of healthy forests and herblands across the Blue Mountains.

Local residents and visitors alike seek out the national forests year-round for recreational opportunities. Activities range from seeking solitude in the backcountry to staying in developed campgrounds along travel corridors and more, including hunting, fishing, wildlife watching, rock climbing, hiking, whitewater rafting, horseback riding, and off-highway vehicle use. Hunters congregate during elk, deer, and antelope season in the late summer and fall and make important contributions to local economies. Winter sports opportunities for snowmobiling and cross-country and downhill skiing are exceptional.

The Blue Mountains provide areas with an undeveloped character and backcountry setting. With 7 designated wilderness areas, 1 national recreation area, and 13 wild and scenic rivers, the national forests offer a variety of diverse experiences. The Eagle Cap Wilderness Area, the largest wilderness area in Oregon, is especially popular and is often referred to as the little Switzerland of America.

Exceptional scenic qualities are important features of the Blue Mountains. The beautifully rugged and remote Hells Canyon National Recreation Area comprises an exceptional richness and diversity of unique geology and vegetation that support a variety of fish and wildlife species. The wild and scenic Snake River corridor provides outstanding scenic qualities, as well as important recreational boating and hiking opportunities. Other wild and scenic rivers, including the Grande Ronde, Malheur, and North Fork John Day rivers and Eagle Creek, have outstanding features, such as unique history, critical fish habitat, and unusual geology.

The national forests provide the backdrop to communities that value views and scenery. Several of the roads that provide access to the national forests are part of national, regional, and state scenic byways. Along the Hells Canyon, Blue Mountain, Elkhorn, or Journey through Time Scenic Byways, visitors and residents enjoy scenic panoramas of pastoral valleys, mountain

vistas, and rolling uplands interspersed with steep river canyons. An abundance and variety of wildlife species may be seen, including bald eagles in the winter and bighorn sheep in the summer and fall. Remarkable scenery and solitude is available in many areas, including the Vinegar Hill-Indian Rock Scenic Area located along the border of the Malheur and Umatilla National Forests.

Management Challenges

Providing for the socially, economically, and ecologically sustainable management of the Malheur, Umatilla, and Wallowa-Whitman National Forests is affected by a complex set of factors outlined in the Blue Mountains Forest Plan Revision Need for Change (2005). Sustaining the values and contributions provided by the national forests depends on the ability to reconcile these challenges to national forest and community sustainability. By achieving a set of integrated ecological, social, and economic goals and desired conditions, the national forests are more likely to contribute to a broader range of sustainable and resilient ecosystems now and in the future.

Social and Economic Expectations

Public land management inevitably involves conflicting public desires, values, and preferences. The public expects a diversity of uses from National Forest System lands. People frequently disagree about how the national forests should be managed. Interests and opinions are often held strongly, which can lead to a decision-making process characterized by conflict and controversy. This increases the complexity of national forest management.

Diverse Experiences

An increasing number of visitors (local, regional, and national) rely on the national forests for recreational opportunities and resource uses in ways that are not always compatible. Technological advances have changed the day-to-day activities of visitors and the way people recreate within the national forests. The increased popularity of motorized recreation has generated user conflicts between those seeking motorized experiences and those seeking solitude in their recreation experiences. New capabilities in other recreational equipment, such as mountain bikes and global positioning systems (GPS), allow people to experience the national forests in new and different ways.

Fire-adapted Ecosystems

Fire is a natural part of the ecosystem and ecosystems within the national forests exhibit a wide diversity of natural fire behavior. The cumulative effects of periodic and sometimes extended drought, climate change, increasing vegetative density, shifts in forested species composition, and modified landscape patterns have resulted in conditions in many locations that are outside the range of what is sustainable. These conditions may put the ecosystem at high risk of uncharacteristically large and severe fires and disturbances from insects and disease. The potential for fires with uncharacteristically severe effects exists on approximately 60 percent of the three national forests. In addition, climate change may lead to longer fire seasons and more severe fires. These conditions increase both the challenge and the motivation for restoring the landscape to reduce the severity of fires.

Approximately 20 percent of the Blue Mountains is considered wildland urban interface: area where wildfire can pose a substantial threat to life and property. Firefighter safety and increasing large fire suppression costs are additional consequences and challenges.

Grazing

Livestock grazing (cattle and sheep) within the national forests supports traditional lifestyles and local economies. It also has the potential to impact the condition of National Forest System resources, especially grasslands, shrublands, and riparian areas. This potential impact can affect habitat necessary for terrestrial and aquatic animal species. Contact between permitted domestic sheep and bighorn sheep has led to disease transmission, which has had a substantial impact on bighorn sheep populations in the area.

Transportation System

Expanding road networks have created many opportunities for uses and activities within the national forests, including a wide range of recreational motorized use, firewood collection, hunting and fishing access, and berry picking. Vegetation management and firefighting are primarily accomplished by use of the road network. Conversely, road networks have dramatically altered the character of the landscape by increasing erosion and introducing sediment to stream systems, which can alter the stream channel, reduce aquatic productivity, and limit the survival and growth of fishes. The road networks also fragment habitat. Road use can displace animal populations and increase the spread of invasive species and noxious weeds. The cost of maintaining the road networks and the maintenance backlog also present challenges. The Forest Service must find an appropriate balance between the benefits of access to the national forests and the costs of road-associated effects to social and ecosystem values.

Invasive Species

A large challenge for ecosystem management is arresting the spread and preventing the establishment of invasive, undesirable, nonnative species, including insects and disease, aquatic species, and terrestrial species. Increasingly, these invasive species are displacing native species and altering ecosystem structure, composition, and function. Many invasive species have become well established and are difficult to eliminate, and some infestations could become more extensive.

Invasive species do not respect ownership boundaries, and collaboration between the Forest Service, partners, and the public is important to prevention, restoration, and control efforts. Rapid response is important to address new infestations of high priority invasive species. Many pathways exist for introduction and/or spread of invasive species to water bodies on National Forest System lands, including public recreational use (off-highway vehicle use, boating, and fishing), illegal dumping of yard wastes, wildfire control activities, and vegetation management operations.

Climate Change

Average temperatures in the Pacific Northwest have increased by about 1 degree Celsius (1.8 degrees Fahrenheit) since 1900, and the rate of warming during the last 50 years is nearly twice the rate of the previous 100 years (ISAB 2007). The rate of warming is expected to increase in the 21st century. Mean annual temperatures are expected to rise by 0.3 degrees Celsius (0.5 degrees Fahrenheit) per decade through 2050 in response to continued increases in atmospheric greenhouse gases (Mote et al. 2008). After 2050, projected temperature increases rely largely on changes in greenhouse gas emissions from the present levels. Total temperature increases could reach 3 degrees Celsius (5.3 degrees Fahrenheit), relative to the 1970-1999 average, by the decade of 2080-89. Little change in precipitation is predicted, although model results vary from minus 10 percent to plus 20 percent change by 2080.

Other expected changes in the Pacific Northwest include:

- Higher temperatures will result in more winter precipitation falling as rain instead of snow.
- Low elevation snowpacks may disappear completely; average snowpack is expected to decline by 53 to 65 percent by the decade of 2080-89.
- Winter precipitation is expected to increase slightly and summer precipitation is expected to decrease slightly.
- Increased winter and spring temperatures combined with decreased winter snowfall will exacerbate the current trend toward earlier spring runoff and lower late-season streamflow.
- Winter streamflow will be more variable with an increased likelihood of rain-on-snow floods.
- Increased risk of higher flood peaks as well as increased risk of extended droughts is expected.
- Lower summer streamflow and higher summer water temperatures will likely reduce available habitat for cold-water fish species (ISAB 2007) and alter disturbance regimes, including, but not limited to, increased fire severity and frequency and more frequent occurrences of forest insects and disease outbreaks.

Reductions in winter snowpack are already beginning to be reflected in earlier spring streamflow throughout the western United States (Dettinger 2005 and Hamlet et al. 2005), and this decline is expected to accelerate during the next century. Continued warming in the Pacific Northwest is likely to result in increased water use by vegetation (Hamlet et al. 2007) that may result in increased drought stress and reduced water availability for wildlife and humans. In particular, changes in the timing of watershed runoff are expected to place increased stress on water supplies and water storage facilities throughout the Pacific Northwest. Redistribution of forested and nonforested habitats is expected, resulting in altered habitat conditions for most terrestrial wildlife species.

Climate change is expected to affect species range and species composition and alter competitive relationships between plant species. Changes in the composition and structure of plant communities will, in turn, alter the character and distribution of wildlife habitats. Future conditions may be more favorable to some undesired nonnative plant and animal species. The full extent of changes in response to climate change on natural resources in the Blue Mountains is uncertain, but a management priority is to maintain or increase the resilience of the national forests in the face of these changes.

Many of the implications of expected climate change are discussed in the individual resource sections in Part 1.

Wildlife Habitat

The increase in dense, multi-story forest stands provides habitat conditions that sustain a variety of wildlife species at higher densities and in larger areas than possibly occurred when the national forests were dominated by more open forest conditions. The challenge is to balance the need to shift forest conditions toward more open and sustainable conditions with the need to continue to provide habitat for species that prefer the dense, multi-story conditions. An additional challenge is managing public use and land management access to the road system at a level that will not render the surrounding habitat unusable to wildlife due to human disturbance and the loss of snags as a result of firewood collection and hazard tree removal.

Old Forest

Open canopy old forest within the dry vegetation type has declined substantially from historic levels, and the species that rely on this structural stage are declining (Wisdom et al. 2000). Although the status of some species associated with dense old forest multi-story may be increasing, the ecological processes are not sustainable. It will be a challenge to restore old forest and balance the needs of species that rely on dense forests, especially with the moisture stress that climate change may cause on some sites and the associated increase in severity of fires.

Watersheds and Aquatic Habitats

Watershed conditions in most areas of the Blue Mountains have been degraded to varying degrees by a long history of land use activities, including placer and lode mining, timber harvesting, road construction, livestock grazing, irrigated agriculture, water diversions, and other human uses. The impacts of these activities are still reflected in the condition of many watersheds today (McIntosh et al. 1994a, 1994b, Wissmar 2004). The extent and quality of aquatic habitats, as well as watershed and soil conditions, have been greatly reduced from historic conditions, and populations of anadromous and resident fishes have declined as a result (Gregory and Bisson 1997). In particular, large declines in pool habitat, large wood, and aquatic habitat diversity have been noted in streams in the Blue Mountains (McIntosh et al. 1994a, 1994b). In addition, high road densities contribute sediment, alter riparian habitats, and increase the rate of watershed runoff. Access to more than 3,700 stream miles on National Forest System lands are blocked or partially blocked by culverts that were not originally designed to provide for fish passage.

Remaining high-quality aquatic habitats are often isolated and fragmented. Increasingly, these habitats are limited to federally-managed lands and no longer represent the full range of habitat types or conditions to which aquatic species are adapted. Restoration of watershed and aquatic habitat conditions has been underway for decades but will require an increasingly more integrated approach to improve effectiveness. Restoration needs to address terrestrial, riparian, and aquatic habitats in multiple spatial scales and multiple ownerships. In some cases, improvements may not be seen for decades or centuries (Reeves et al. 1995). Habitat restoration, by itself, is not a substitute for appropriate environmental protection, and management that relies solely on rehabilitation of altered habitats cannot sustainably provide for ecosystem health (Gregory and Bisson 1997; Wissmar et al. 1994a, 1994b).

Degraded habitat conditions and several other factors have contributed to the Federal listing of bull trout across their range; Chinook salmon (both fall and spring/summer) and steelhead in the Lower Snake Basin; and summer steelhead in the Middle Columbia Basin as threatened under the Endangered Species Act.

Water quality does not meet standards in more than 1,200 miles of stream in Oregon and Washington. Water quality limited stream segments occur in every major drainage in the Blue Mountains and are located on both private and public lands.

Water that flows from National Forest System lands is used downstream for drinking water, irrigation, and hydroelectric power generation, among other uses. Watershed restoration may have varying societal benefits, depending on geographic location, by improving water quality for downstream users, moderating flood flows, maintaining the quantity of water that flows from streams and rivers on National Forest System lands, and reducing the amount of sediment that enters the streams.

Considering Climate Change in Designing Desired Conditions

The development of the desired conditions includes consideration of the future effects of climate change. Therefore, this statement about climate change will not be repeated in each desired condition description. The broad-scale climate change assumptions and potential effects that were considered when writing the desired conditions include:

- Continued warming in the Pacific Northwest is likely to result in increased water use by vegetation (Hamlet et al. 2007)
- Reduced water available for forest vegetation, wildlife, and humans
- Increased stress on water supplies and water storage facilities throughout the Pacific Northwest
- Redistributed forested and nonforested habitats

Making progress toward achieving the desired conditions (or achieving them) provides for the adaptations within the landscape necessary to respond to climate change. This in turn contributes to the adaptation and mitigation components of the Forest Service's national climate change strategy.

The climate change adaptation strategy is addressed in the desired conditions by:

- Including genetic considerations that are likely to be better adapted to the expected climate and changed species distribution
- Desiring lower stand densities, especially in areas that are uncharacteristically dense
- Desiring fewer multi-layer stands
- Desiring greater abundance of early seral tree species (ponderosa pine and larch)
- Desiring a larger portion of the landscape to have larger diameter overstory trees along with reduced amounts of smaller diameter understory trees
- Desiring fewer invasive species

The climate change mitigation factor is addressed in the desired conditions by:

- Managing for longer forest stand rotations and older trees to store more carbon
- Taking into consideration the increasing use of biomass as technology becomes available and demand grows

This desired landscape will allow more flexibility for responding to the potential effects of climate change, including longer fire seasons and increased moisture stress in the summer. The desired landscape will provide a better contribution to carbon storage by reducing the uncharacteristic effects of wildfire and by storing more carbon in larger diameter trees.

Goals and Desired Conditions

The goals and desired conditions are a set of interrelated ecological, social, and economic conditions. The land and resources of the planning area are to be managed to achieve or maintain goals and desired conditions and to allow the national forests to contribute to a range of outcomes now and in the future. This emphasis on integration of the goals and desired conditions promotes

an adaptive and active management philosophy, including working with partners, to accomplish this vision for the Blue Mountains. Goals and desired conditions are a plan component as discussed in the introduction to the forest plan.

The following goals and desired conditions explain the conditions, processes, and relationships that the Forest Service will seek to achieve. Some conditions may already exist. Some are achievable during the life of the forest plan. Others may only be achievable during a longer period of time, possibly decades. Making progress toward achieving the goals and desired conditions will depend on funding and program direction provided by higher levels in the agency and Congress and will also be affected by natural events.

A brief background description and a brief existing condition description of each indicator are provided, followed by the desired condition and statement of scale. The background and existing condition descriptions are provided for information only. They are not plan direction.

Management actions that cause movement away from achieving goals and desired conditions in the short term are acceptable so long as the goal is that desired conditions are either achieved or maintained in the long term.

Many desired conditions were derived from national fire regime condition class (FRCC) information, vegetation dynamics development tool (VDDT) modeling (ESSA Technologies Ltd. 2005), national Landfire modeling, collaborative workshops, and professional experience informed by estimates of historic range of variability (HRV).

The following outline shows the numbering system and headings and subheadings used to organize the goals and desired conditions.

Goal 1: Promote Ecological Integrity

1.1 Watershed Function
- 1.1.1 Hydrologic Function
- 1.1.2 Riparian Function
- 1.1.3 Wetland Function
- 1.1.4 Groundwater Dependent Ecosystem Function
- 1.1.5 Stream Channel Function
- 1.1.6 Aquatic Habitat Function

1.2 Species Diversity
1.3 Productive Capacity
1.4 Disturbance Processes
- 1.4.1 Wildland Fire
- 1.4.2 Insects and Disease

1.5 Invasive Species
1.6 Structural Stages
1.7 Plant Species Composition
1.8 Stand Density
1.9 Air Quality
1.10 Soil Quality
1.11 Water Quality
1.12 Landscape Patterns
1.13 Special Habitats
1.14 Snags and Down Wood

Goal 2: Promote Social Well-being

2.1 Scenery
2.2 Old Forest
2.3 Recreation
2.4 Hunting and Fishing
2.5 Rocky Mountain Elk
2.6 Cultural Resources
2.7 Roads and Trails Access
2.8 Wildland Urban Interface
2.9 Tribal Rights and Interests
2.10 Culturally Significant Foods
2.11 Community Resiliency
2.12 Wild Horses

Goal 3: Promote Economic Well-being

3.1 Facilities and Infrastructure
3.2 Land Ownership
3.3 Goods and Services
- 3.3.1 Forest Products
- 3.3.2 Livestock Grazing
- 3.3.3 Special Uses
- 3.3.4 Mineral and Geological Resources
- 3.3.5 Water Use

Goal 1: Promote Ecological Integrity

Ecological integrity is a condition that sustains the wholeness or completeness of ecosystem structure, composition, and function. The national forests' contribution to ecological function is described by watershed function, species diversity, productive capacity, disturbance processes, and invasive species. Ecological structure and composition are described by structural stages; plant species composition; stand density; and air, soil, and water quality. Landscape patterns, special habitats, and snags and down wood are also indicators of sustainability in the Blue Mountains national forests. Although the primary focus of this section is ecological integrity, this goal and the desired conditions are interrelated with the social and economic components of sustainability.

Background Information and Existing and Desired Conditions

1.1 Watershed Function

The existing and desired conditions for 1.1 Watershed Function are described by key watersheds and all watersheds and in 1.1.1 Hydrologic Function, 1.1.2 Riparian Function, 1.1.3 Wetland Function, 1.1.4 Groundwater Dependent Ecosystem Function, 1.1.5 Stream Channel Function, and 1.1.6 Aquatic Habitat Function.

Background: Watershed function includes all of the surface and subsurface processes acting on or beneath hillslopes and within stream channels that control the movement of water, wood, sediment, and nutrients. The rate at which these processes occur is affected by local geology, topography, and climate and is moderated by local soil and vegetation. The movement of water and sediments modifies the physical structure of watersheds and determines the spatial distribution and composition of riparian and aquatic habitats.

Several elements combine to control the multiple processes that are fundamental to the development and long-term vitality of watersheds. These include characteristics of flow regime, composition of riparian areas and wetlands, stream channel characteristics, and habitat characteristics, each of which is described in this section.

Properly functioning watersheds will provide a range of benefits both on and off of the national forests, including, but not limited to, providing habitat for terrestrial, aquatic, and riparian-dependent species; maintaining water quality; providing channel stability; reducing erosion; moderating floods; and maintaining reliable stream flows for downstream users.

Existing Condition: Since the beginning of European settlement in the mid-1800s, watershed conditions in the Blue Mountains have been altered by agriculture, livestock grazing, mining, timber harvest, fire suppression, the development of an extensive road network, dams, stream channelization, and water diversions (Wissmar et al. 1994) that have resulted in widespread degradation of riparian and aquatic habitats (McIntosh et al. 1994). The intentional near extirpation of beaver in the Pacific Northwest by the Hudson's Bay Company prior to 1840 (Johnson and Chance 1974) may also have been a factor in the decline of riparian and aquatic habitats in the Blue Mountains, especially in basins where beaver were formerly abundant (Knopf and Scott 1990). Much of the remaining few high quality aquatic habitats are located on National Forest System lands and may no longer represent the historical range of occupied habitats available to aquatic species (Gregory and Bisson 1997, Sedell et al. 1997).

The ability to maintain existing high quality habitats and restore degraded habitats will be affected by climate change that is expected to include, during the next several decades: higher

average temperatures; more winter precipitation falling as rain versus snow; diminishing winter snow packs resulting in earlier snowmelt, changes in runoff volume and lower summer base flows; higher surface water temperatures; and possibly greater year-to-year variability in precipitation that could include extended drought periods as well as greater magnitude floods than have occurred in recent history. Flow regimes that change in response to climate change will have implications for terrestrial vegetation, terrestrial wildlife, riparian and aquatic species, and water availability for human use.

The need to preserve remaining high-quality aquatic habitats in order to preserve existing at-risk fish species in the Pacific Northwest is well documented (McIntosh et al. 1994a, Lee et al. 1998, Reeves et al. 1995, Rieman et al. 2006). Current research indicates that maintaining the best remaining habitat and watersheds that currently support strong populations of anadromous and resident fish species is crucial to the continued existence and eventual recovery of these species.

The key watersheds identified (details are in the project record) currently contain strong populations of aquatic species and the habitat needed to support them or are areas that are expected to provide high quality habitat at some time in the future (Sedell et al. 1997). The selection of key watersheds is based on present knowledge of watershed and habitat conditions, recognition of restoration priorities within the Pacific Northwest Region of the Forest Service, and other information. The process used to select key watersheds is described by Reiss et al. (2008) and is in the project record.

Key watersheds consist of individual subwatersheds or groups of subwatersheds within individual subbasins and are ultimately intended to form the centers of broadly connected networks of high-quality aquatic habitats, as well as to reduce fragmentation in existing habitats and core fish populations.

Two-hundred-twenty-nine of 489 subwatersheds (47 percent) on National Forest System lands are identified as key watersheds based on the presence of strong populations of one or more aquatic species, habitat characteristics, and watershed conditions. The project record contains a map of key watersheds and a table that identifies the full list. Of these, 76 subwatersheds are identified as priorities for restoration.

The role of key watersheds is to serve as habitat refugia for existing populations and to provide sources of individuals that are able to colonize new habitats as conditions improve. The management emphasis in all key watersheds is to protect existing populations and their habitats while incurring the lowest level of risk to those populations.

Key Watersheds

Desired Condition: Networks of watersheds with good habitat and functionally intact ecosystems contribute to and enhance conservation and recovery of specific threatened or endangered fish species and provide high water quality and quantity. The networks contribute to short-term conservation and long-term recovery at the major population group, core area, or other appropriate population scale.

Roads in key watersheds do not present substantial risk to aquatic resources.

Key watersheds have high watershed integrity and provide resilient aquatic and riparian ecosystems.

Scale: Subwatershed.

All Watersheds

Desired Condition: The watershed-scale processes that control the routing of water, sediment, wood, and organic material operate at levels that result in self-sustaining riparian and aquatic ecosystems that do not require human intervention or restoration.

Scale: Watershed or subwatershed.

Desired Condition: The distribution, diversity, and complexity of watershed and landscape-scale features, including natural disturbance regimes, provide aquatic and riparian ecosystems to which species, populations, and communities are uniquely adapted.

Scale: Subbasin.

Desired Condition: Connectivity exists within watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact habitat refugia. These network connections provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic, riparian-dependent, and many upland species of plants and animals.

Scale: Connectivity is between watersheds at the subbasin scale for forestwide planning; between subwatersheds at the watershed scale for project planning.

1.1.1 Hydrologic Function

Background: Hydrologic function includes all of the processes involved in the conversion of precipitation to streamflow, as well as properties of the flow regime, including the magnitude, frequency, duration, timing, and variability of streamflow within a watershed. All important physical and biological processes within watersheds, including the movement of water, sediment, wood, and nutrients, as well as the creation of aquatic habitats, are driven by variability of the flow regime (Angermeier 1997). Recurring flows of moderate to high magnitude are responsible for most sediment transport and maintain stream channel size and shape (Wolman and Miller 1960). High flows rearrange and create riparian habitats by dispersing seeds and creating sites for establishment of riparian species. In summer months, low flows sustain riparian vegetation that provides channel and bank stability, especially on low-gradient streams in wide, unconfined valleys. Differences in topography within riparian zones, combined with the differing water requirements and tolerances of riparian plant species result in diversity of habitat types.

On hillslopes, the primary controls of hydrologic function are topography, the type and density of vegetation, and the physical properties of soils. The alteration or removal of vegetation or ground cover by activities such as fire, timber harvest, the use of mechanized equipment, livestock grazing, and the construction of roads alters hydrologic pathways in ways that can result in increased hillslope and stream channel erosion rates.

Groundwater inflows and hyporheic exchange in streams and floodplains are important contributors to streamflow, especially in summer, and has the additional benefit of being a source of cool water that helps moderate stream temperatures.

Existing Condition: Runoff from watersheds in the Blue Mountains is largely dominated by snowmelt between March and June, along with the earlier runoff from low-elevation watersheds and later runoff from high-elevation watersheds. However, in lower elevation watersheds, a substantial part of annual streamflow, and most peak flow events, occurs during winter rains between December and February. There is some indication of increasing summer streamflow in

parts of the Blue Mountains since the early 1900s (Wissmar et al. 1994a) that some authors attribute to land use effects, but that could also be driven by changes in the seasonal distribution of precipitation (details are in the project record). There is also evidence that the amount of precipitation that becomes streamflow is declining, which is consistent with observed climate warming since about 1950 and may be attributed to increased rates of evaporation and transpiration by terrestrial vegetation in response to increasing temperature. Changes in the timing of runoff, combined with changes in stream temperature due to climate change, could affect, for example, the timing of migration and spawning success of salmonid species, as well as alter the availability of water for downstream users.

Desired Condition: Instream flows, including water yield, timing, frequency, magnitude, and duration of runoff, are sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of movement of sediment, nutrients, and wood. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows are within the natural range of variability in which the system developed.

Scale: Watershed.

Desired Condition: The species composition and structural diversity of native plant communities in riparian management areas, including wetlands, provides adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and supplies amounts and distributions of coarse woody debris and fine particulate organic matter sufficient to sustain physical complexity and stability.

Scale: Watershed scale for forestwide planning; subwatershed scale for project planning.

Desired Condition: The timing, variability, and duration of floodplain inundation are within the natural range of variability.

Scale: Watershed.

Desired Condition: The sediment regime is within the natural range of variability. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

Scale: Watershed.

Desired Condition: The timing, duration, and variability of inundation, or water table elevation, in wetlands, seeps, and springs are within the natural range of variability.

Scale: Subwatershed.

1.1.2 Riparian Function

Background: Riparian areas are loosely defined as the zones adjacent to stream channels, ponds, and lakes that are transitional between the channel and upland habitats (NRC 2002). Riparian vegetation includes species that require free or unbound water or conditions more moist than normally found in the area (Franklin and Dyrness 1973).

Riparian areas are important for their critical role in nutrient cycling, stream channel and bank stability, water quality, filtering of sediment from upslope areas, and the supply of particulate and woody organic material to stream systems. Riparian vegetation provides stream shade that contributes to thermal regulation in both winter and summer. Particulate organic material derived

from riparian vegetation forms the base of aquatic food webs, while large organic material creates channel structure and habitat complexity. Some aquatic insects require certain types of riparian vegetation (e.g., willows) in order to complete their life cycles, while an estimated 75 percent of terrestrial wildlife species in the Blue Mountains either depend on riparian zones directly or utilize them more than other habitats (Raedeke 1989, Thomas 1979). Riparian areas are considered the most critical of wildlife habitats in the Blue Mountains (Johnson and O'Neil 2001). This is due not only to the unique habitat features found in riparian zones, but also because they serve as natural corridors or migration routes and as connecting corridors between patches of suitable habitat in an otherwise fragmented landscape.

More than 180 riparian plant association types that can be broadly classed into tree, shrub, and herbaceous potential vegetation groups have been identified on National Forest System lands in the Blue Mountains (Crowe and Clausnitzer 1997, Wells 2006).

Existing Condition: Based on surveys of perennial, fish-bearing streams, about 48 percent of riparian habitats in the Blue Mountains are forested, 29 percent are shrub-dominated and 23 percent are currently classified as herbaceous. In forested sites, 97 percent are conifer dominated and 3 percent are hardwoods dominated (primarily black cottonwood or aspen).

Hardwood tree and shrub-dominated riparian zones are known to have declined across the Blue Mountains since about 1850 (Lee et al. 1997, Wisdom et al. 2000), although the extent of loss on National Forest System lands is difficult to quantify. In streams that presently pass through dry coniferous forests that have been converted to young, dense stands of Douglas-fir and/or white fir, shade intolerant shrubs may be absent or in decline (Liquori and Jackson 2001). Direct impacts to riparian areas have included grazing, conversion of floodplains to agricultural lands, road construction, mining, timber harvest, splash damming, and channelization, all of which result in lost or degraded riparian habitats and loss of channel stability and habitat complexity.

Desired Condition: Riparian management areas (RMAs) within any given watershed reflect a natural composition of native flora and fauna and a distribution of physical, chemical, and biological conditions appropriate to natural disturbance regimes affecting the area.

Scale: Subwatershed.

Desired Condition: Key riparian processes and conditions (including slope stability and associated vegetative root strength, bank stability, wood delivery to streams, and, within the riparian management areas, input of leafy and organic matter to aquatic and terrestrial systems, solar shading, microclimate, and water quality) are operating consistent with local disturbance regimes.

Scale: Subwatershed.

Desired Condition: Riparian vegetation has the species composition, structural diversity, age class diversity, and extent that is characteristic of the setting in which it occurs and the hydrologic and disturbance regimes in which it developed. The condition and composition of small habitat patches may change over small temporal and spatial scales but remains relatively constant at larger scales.

Scale: Subwatershed to subbasin.

Desired Condition: Riparian shrub communities occupy their historical range and extent. Individual plants are capable of reaching the full potential for a typical individual of a particular

species, as defined by plant height, width, and growth form. Individual plants are able to propagate, or reproduce, vegetatively and/or sexually. Plant communities are similar in species composition, age class structure, canopy density, and ground cover to plant associations (Crowe and Clausnitzer 1997) that are representative of a particular setting.

Scale: Subwatershed.

Desired Condition: Riparian areas consist of native assemblages of riparian-dependent plants and animals free of persistent nonnative species and provide for dispersal and travel corridors, as well as connectivity, between geographically important areas for both terrestrial and aquatic animals and plant species within the planning area.

Scale: Subwatershed.

1.1.3 Wetland Function

Background: Wetlands, including swamps, bogs, seeps, fens, springs, peatlands, and marshes, occur in areas where the soil is either inundated by water or saturated for at least part of the growing season. Wetland vegetation includes species that are adapted to saturated soil conditions. Some, but not all, streamside riparian areas that meet the above criteria may be classified as riverine wetlands (Cowardin et al. 1979), but wetlands occur in a variety of settings where there is a source of either surface or groundwater. Wetlands, in general, have disproportionately higher plant species diversity relative to surrounding upland habitats.

Small wetlands may be isolated from other surface waters and often represent unique habitats that are highly important to aquatic and terrestrial wildlife. Some wetlands are also critical habitat for many sensitive, rare, or uncommon plant and lichen species, many of which occur only in these habitats.

Wetlands play an important role in protecting water quality, processing excess nutrients, and contributing to groundwater recharge, among other functions, but not all wetland types provide the same functions, nor do they provide them equally (Euliss et al. 2004). Many wetlands are sites of natural water storage that, depending on where they occur, contribute to groundwater recharge and reduce the magnitude of floods. Because of the contribution to biological diversity, wetlands are regulated under Federal law by the Clean Water Act and through Executive Order 11990, which requires Federal agencies to limit or avoid activities that result in impacts to wetlands.

In addition, some wetlands are essential breeding, rearing, and feeding grounds for many species of fish and wildlife, including breeding bird populations, migratory bird, fish, and shellfish species. Approximately 75 percent of the terrestrial wildlife species in the Blue Mountains are known to use riparian or wetland habitats during their lifetimes (Raedeke 1989, Thomas 1979).

Headwater springs and their associated wetlands, such as those that occur in the Middle Fork John Day River, to name one example, are important sources of stream flow in many drainages. More than 1,300 springs, representing an unknown fraction of groundwater resources, are developed for water use within the three national forests predominantly for livestock watering, but also for human consumption, administrative use, and use by wildlife.

Existing Condition: As with riparian areas, the extent of wetland habitats in the Blue Mountains has likely declined from historic conditions. In Oregon, wetland area has declined 38 percent since 1800 (Swift 1984). Isolated wetlands that often represent unique habitat types are often utilized for human uses, including livestock watering. In streamside areas, the combined effects

of water diversions, livestock grazing, beaver removal, channel degradation, and other impacts have resulted in widespread loss or conversion of wet meadow wetland types to dry meadows or upland shrublands.

Desired Condition: The extent and diversity of wetland types in the Blue Mountains is maintained or increased.

Scale: Subbasin.

Desired Condition: The surface and subsurface flow paths that support wetland habitats are undisturbed. The timing and duration of inundation of wetlands are within natural ranges. Plant species composition in wetlands is characteristic of the biophysical setting in which they occur.

Scale: Subwatershed.

1.1.4 Groundwater-dependent Ecosystem Function

Background: See 1.1.3 Wetland Function.

Existing Condition: See 1.1.3 Wetland Function.

Desired Condition: Springs, peatlands and groundwater fed wetlands in the Blue Mountains are maintaining or regaining their ecological structure and function.

The aquifer supplying water to groundwater-dependent ecosystems is not being affected by groundwater withdrawal or loss of recharge. Soils of groundwater dependent ecosystems are intact and functional; erosion and deposition are within the natural range. Runout channels, if present, are functioning naturally and are not entrenched, eroded, or substantially altered. Vegetation is composed of the anticipated cover of plant species associated with the site environment; hydric species are present and are not replaced by upland species. Livestock herbivory and trampling are not adversely affecting sites.

Scale: Subwatershed.

1.1.5 Stream Channel Function

Background: Streams and rivers convey water, as well as sediment, nutrients, organic material, and dissolved substances. The physical attributes of stream channels are determined largely by local geology, topography, climate, and characteristics of the flow and sediment transport regimes. Small headwater (ephemeral) streams may comprise up to 70 to 80 percent of the channel length in any given watershed and are typically important sources of water, sediment, wood, and nutrients to larger streams (Benda 1990, May and Gresswell 2004, Reneau and Dietrich 1987).

Existing Condition: Timber harvest, mining, water diversion, livestock grazing, channelization, and road construction adjacent to streams have all affected stream channels in the Blue Mountains. Most managed watersheds have high road densities (greater than 2.4 miles per square mile) that result in increased sediment delivery from road surfaces, drainage features, and road-stream crossings. Roads constructed within riparian areas are likely to directly affect stream channels or limit lateral migration of the channel.

Early timber harvest in the Blue Mountains focused on riparian areas because the areas were more accessible and local rivers provided a method for easily transporting trees to sawmills

(Sedell et al. 1991). Stream cleaning, combined with riparian timber harvest, has reduced in-channel structure and channel stability and has removed potential sources of large wood to streams. Removal of beavers from most of the Blue Mountains prior to about 1840 (Johnson and Chance 1974) is an early impact to low gradient streams in unconfined river valleys from which many of these streams still have not recovered.

Desired Condition: The physical integrity of the aquatic system, including shorelines, banks, and bottom configurations, are properly functioning and in dynamic equilibrium with the flow and sediment regimes under which aquatic systems have evolved.

Scale: Subwatershed to watershed.

Desired Condition: Channel morphology, structure, complexity, and diversity are in ranges that are characteristic of the local geology, climate, and geologic processes.

Scale: Subwatershed.

Desired Condition: The sediment regime under which aquatic ecosystems evolved is maintained, including the timing, volume, rate and character of input, storage, and transport.

Scale: Watershed.

1.1.6 Aquatic Habitat Function

Background: Aquatic habitats are an important source of biodiversity because of the variety of physical and hydrologic settings in which they occur. Aquatic habitats can be divided into running water (streams and rivers) and open water (lakes, ponds, and wetlands) habitats. Open water habitats occur on river floodplains and in topographic depressions and may be hydrologically supported by either ground water or surface water. Backwater or off-channel areas that have physical connections to streams and rivers can be biologically important as rearing habitat for many aquatic species, including trout and salmon.

Aquatic habitats are shaped by a combination of physical and biological factors (including streamflow variability, sediment transport, stream channel characteristics, riparian habitat characteristics, water quality, accumulation, and the processing of wood and other organic material) and the connectivity and spatial distribution of habitat types within and adjacent to channel networks.

Existing Condition: Habitat degradation is one of the most commonly cited factors in the decline of resident and anadromous fish species in the Pacific Northwest (Gregory and Bisson 1997). Habitat quality may still be in decline in some parts of the Blue Mountains. McIntosh et al. (1994) noted significant declines in large pool habitats in managed watersheds between 1930 and 1990, while increases in large pool habitat were noted in unmanaged watersheds during the same period. Some habitat types may have been under-represented historically on National Forest System lands, underscoring the importance of the remaining high quality habitats, regardless of type or ownership. High road densities continue to contribute to poor aquatic and riparian habitat conditions. In addition, more than 1,285 culverts block or impair access by aquatic species to more than 3,700 miles of streams on National Forest System lands.

Desired Condition: Aquatic habitats contribute to ecological conditions capable of supporting self-sustaining populations of native species diversity of plant, invertebrate, and vertebrate riparian-dependent species.

National forests in the Blue Mountains contribute to the protection of population strongholds for listed or proposed threatened and endangered species, state classified sensitive species, and narrow endemics, as these strongholds provide high quality habitat and support expansion and recolonization of species to adjacent watersheds. These areas conserve key demographic processes likely to influence the persistence of populations or metapopulations.

Scale: Subwatershed to subbasin.

Desired Condition: Habitat elements (including spawning and rearing habitat, substrate, pool habitat, winter habitat, migration corridors, cover, food, habitat complexity, water quality, refugia, productivity, and connectivity) are in functional condition and are sufficiently distributed to support self-sustaining populations of native resident and anadromous fish.

Native fish species have access to historically occupied aquatic habitats and connectivity between habitats allows for the interaction of local populations.

Scale: Subbasin.

1.2 Species Diversity

Background: Providing for the appropriate amount, distribution, and quality of habitat for native and desired nonnative aquatic and terrestrial species (plants and animals, vertebrates and invertebrates) within the Blue Mountains is an integral component of ecological function. The ability to sustain this habitat, as well as the connectivity of habitat patches, is also important to the maintenance of ecological function.

The National Forest Management Act requires land and resource management plans to contribute to the diversity of plant and animal communities, based on the suitability and capability of the land area, while meeting overall multiple-use objectives. The overall goal for this framework is to provide the ecological conditions that support a diversity of native plant and animal species within a planning area. Natural ecosystems are only sustainable when the native biodiversity (the variety of life and its processes) and the functional basis of productivity are maintained (Johnson and O'Neil 2001).

In general, comparing the existing vegetative communities to a set of reference conditions (presettlement, natural range of variability, etc.) allows the evaluation of changes in disturbance regimes and acts as a check on the adequate representation of ecological communities (Samson 2002), which in turn should support species diversity. There are instances where maintaining ecosystem diversity might not provide the ecological conditions necessary to sustain populations of certain species, in which case a species-specific approach is warranted. This is often the case for those species that are listed under the Endangered Species Act by either the U.S. Fish and Wildlife Service or the National Marine Fisheries Service.

The Blue Mountains are relatively intact, being dominated by natural or semi-natural vegetation, and are home to more than 250 wildlife species. The Blue Mountains have been included in several broad scale assessments that have addressed species diversity at various levels, including the Interior Columbia Basin Ecosystem Management Project.

Existing Condition: Although the Blue Mountains are relatively intact, habitats have been impacted by interrelated changes in ecological process due to logging, grazing, fire suppression, and urban development. Although management issues exist for most vegetation communities, the

primary anthropogenic impacts of the last 100 years have resulted in extensive changes in the distribution, structure, and species composition of the ponderosa pine forest.

A wide variety of wildlife species reside in the Blue Mountains. Common large mammals include Rocky Mountain elk, mule deer, and black bear. Several furbearers are present, such as beaver, marten, and raccoon. Many species of small mammals, birds, bats, reptiles, and amphibians reside within the vegetative communities, and the aquatic environments are home to several anadromous fish species.

A total of 175 species were identified as being of local and/or regional conservation concern for the planning area. The Pacific Northwest Region of the Forest Service adopted processes to guide identifying these terrestrial (USDA Forest Service 2010) and aquatic species (Reiss et al. 2008), as well as for assessing plant species (Homes et al. 2009). Terrestrial species were grouped by potential vegetation group (PVG); risks and threats were identified for the group and a representative species (focal species) was selected for the group. The majority of focal species were determined to have well distributed source habitats that were reasonably connected and similar to what would have been on the landscape historically. There were some species (e.g., white-headed woodpecker); however, where source habitats were far diminished from what probably occurred historically and those existing habitats had poor connectivity. Aquatic focal species were also identified. Based on areas where strong populations of these species are thought to occur, it appears that the majority of subwatersheds are in poor condition, with very few containing population strongholds of fish focal species.

Within the planning area, there are nine species (one mammal, two plants, one snail, and five fishes) listed under the Endangered Species Act by either the U.S. Fish and Wildlife Service or the National Marine Fisheries Service. A list of these species and information regarding each species is included in the project record. Of the nine threatened and endangered species, one, the Bliss Rapids snail, will not be discussed further as it occurs only within the Hells Canyon National Recreation Area and therefore is not within the current planning area.

Desired Condition: The natural range of habitats for native and desired nonnative fish, wildlife, and native plant species, including threatened and endangered species, species identified as regional forester's sensitive species, and focal species, is of adequate quality, distribution, and abundance to contribute to maintaining native and desired nonnative species diversity. This includes the ability of species and individuals to interact, disperse, and find security within habitats in the planning area. These habitat conditions are resilient and sustainable considering the range of possible climate change scenarios.

Population strongholds for the fish focal species provide high quality habitat and support expansion and recolonization of species to adjacent unoccupied habitats. These areas conserve key demographic processes likely to influence the sustainability of aquatic species.

Federally listed species trend towards recovery or are delisted. Management activities improve the conservation status of species identified as being focal species or of local or regional conservation concern. Habitats and populations are managed in accordance with conservation planning documents, recovery plans, best available scientific information, and local knowledge.

Specialized habitat components, such as caves, standing dead trees, seeps, and springs, are found across the landscape in amounts and types commensurate with the natural communities in which they occur.

Scale: The desired condition for species diversity can be applied at a variety of scales (i.e., forestwide, watershed, and subwatershed). During project analysis and implementation, this desired condition should be used concurrently with information outlined in the strategy and design criteria part of this plan and with consideration of the best available climate change projections.

Table 1 lists terrestrial and aquatic focal and management indicator species for the three national forests. Additional information about focal species and their conservation strategies is available from the project record.

Table 1. Terrestrial and aquatic focal and management indicator species

Family	Group	Common Name	Focal Species	Management Indicator Species
Alpine/boreal	Alpine	Gray-crowned rosy-finch	X	
	Boreal forest	Boreal owl	X	
		Water vole	X	
Forest mosaic	All forested communities	Northern goshawk	X	
Medium/large trees	All forested communities	Cassin's finch	X	
	Cool/moist forest	Pileated woodpecker	X	X
		American marten	X	
	Dry forest	White-headed woodpecker	X	X
Open forest	All forested communities	Western bluebird	X	
		Fox sparrow	X	
		Mule deer		MAL only
	Post-fire habitat	Lewis's woodpecker	X	
		Black-backed woodpecker	X	
Upland grassland	Upland grassland	Upland sandpiper	X	
Human disturbance	Habitat generalist	Peregrine falcon	X	
		Wolverine	X	
		Rocky Mountain Elk		WAW/UMA only
Woodland/grass/shrub	Woodland/grass/shrub	Golden eagle	X	
		Lark sparrow	X	
		Pallid bat	X	
	Juniper woodland	Ash-throated flycatcher	X	
	Woodland/shrub	Loggerhead shrike	X	
	Shrub	Sage thrasher	X	
	Grass/shrub	Rocky Mountain bighorn sheep	X	
		California bighorn	X	
	Grassland	Northern harrier	X	
Chambers/caves	Chambers/caves	Townsend's big-eared bat	X	
Riparian	Shrubby/deciduous riparian	Red-naped sapsucker	X	
		MacGillivray's warbler	X	
	Conifer riparian	Inland tailed frog	X	

1.3 Productive Capacity

Background: Productive capacity is described in terms of the growth and accumulation of plant biomass (primary productivity), as well as the growth of animal species that use the products of primary productivity (secondary productivity). Key elements of productivity include the physical, chemical, and biological properties of soils that provide for vegetative growth and the accumulation and cycling of nutrients.

Productivity is based on using natural resources no faster than they are produced or can be replaced and is based on using natural resources without impairment of the long-term productive capacity of the ecosystems from which they are derived. Recent scientific information recognizes that the sustainability of natural systems requires the preservation of the key processes under which those systems developed (Aber et al. 2000, Chapin et al. 1996, Holling 1992, Reeves et al. 1995,). For example, in aquatic systems, variability of the flow regime is responsible for creating and maintaining habitats, influencing riparian establishment and succession, controlling the routing of sediment, and regulating nutrient cycles. Fires regulate many of the same processes in terrestrial systems.

Existing Condition: One of the most commonly measured indicators for productive capacity is growth and mortality rates of vegetation. Other examples for which less data are available include: soil compaction, available nutrients, etc. National Forest System lands in the Blue Mountains generally have high positive net growth rates. Hovee and Jordan (2004), using recent Forest Service inventory data, found that net growth on national forests in eastern Oregon was 45 percent of gross growth. Gross growth was estimated to be 1.7 billion board feet per year. Mortality was estimated to be 774 million board feet per year. Net growth for eastern Oregon was estimated at 791 million board feet of timber. High net growth rates can contribute to problems with overstocking and increased fire hazard. The current removal rate for timber volume in the Blue Mountains is far less than net growth.

Desired Condition: Long-term productivity of aquatic, riparian, and terrestrial ecosystems within the national forests are maintained or restored by both ecological processes and through the use of sustainable management practices, as described in the combined ecological desired conditions. The result of maintenance and restoration treatments is that forest and rangeland ecosystems provide goods and services for human consumption without impairing their long-term productive capacity. However, the restoration of some nutrient cycling processes within some ecosystems consistent with their historic disturbance regimes may result in lower levels of productive capacity, in comparison to existing conditions.

Scale: Forestwide.

1.4 Disturbance Processes

Background: Natural disturbances include wildfire, insects and disease, flooding, drought, landsides, windstorms, and herbivory. Disturbances, either of natural or of human origin, affect all aspects of ecosystems at a landscape level. Human-caused disturbances include timber harvesting, road construction, mining, domestic livestock grazing, and the introduction of exotic species. Disturbance can impact habitat stages, successional stages, structural differentiation, nutrient cycles, forage availability, water quality and quantity yields, successional pathways, wildlife variety and quantity, carbon balances, scenic variability, and the availability and economic value of products.

In many ecosystems, biotic communities have developed adaptations to specific disturbances. Many plant species, for example, may rely on either fire or floods for reproduction and are thus disturbance-dependent. The effect of any particular disturbance is a property of the disturbance as well as the system it affects. One example is the effect of flooding on floodplain rivers in which a regularly recurring flood pulse is responsible for maintaining the long-term dynamics of the river channel, as well as vegetation, on the adjacent floodplain. In this case, the flood is an integral part of the system and is not a disturbance in the same sense (Pickett and White 1985). Instead, disturbance in such systems occurs when there is significant departure from the average hydrological regime (Bayley 1995). Disturbance also depends on spatial scale. A low intensity fire in a mature pine forest, for example, partially consumes above ground herbaceous plant and ground cover, but leaves the basic forest structure intact.

The existing and desired conditions for 1.4 Disturbance Processes are described in 1.4.1 Wildland Fire and 1.4.2 Insects and Disease.

1.4.1 Wildland Fire

Background: There are two types of wildland fire: prescribed fires (planned ignitions) and wildfires (unplanned ignitions). Prescribed fires are ignited by a management action and are designed to meet specific land management objectives. Wildfires are those not ignited by management actions. Some wildfires may be managed to meet specific land management objectives.

The desired conditions for wildland fire (table 1) describe the appropriate severity, frequency, and amount of stand-replacing wildfire for each potential vegetation group. Fire severity describes the effects of the fire on vegetation and includes:

- Low severity fire, meaning less than 25 percent mortality to the overstory vegetation
- Mixed severity fire, meaning greater than 25 and less than 75 percent mortality to the overstory
- High severity fire, meaning greater than 75 percent mortality to the overstory

Frequency describes the average interval between fires.

The percent of stand-replacing fire is the average amount of fire (actual or potential) on the landscape with greater than 75 percent overstory mortality.

Fire regimes are a national classification of the historic combined conditions for fire severity and frequency for a particular environment. Fire Regime 1 (dry upland forest) is characterized by low severity and frequent fires. Fire Regime 2 (dry herbland) is characterized by high severity and frequent fires. Fire Regime 3 (moist upland forest) is characterized by fires of mixed severity with moderate to long intervals between fires (35 to 200 years). Fire Regime 4 (cold upland forest) is characterized by fires of mixed to high severity with long intervals between fires.

Existing Condition: Wildland fire processes have been altered due to fire exclusion, timber harvest, climate change, and grazing. Fires are now larger and more severe than historic levels, especially in the dry forest types (Quigley and Arbelbide 1997). Fire suppression costs for the Forest Service have ranged between 1 and 1.5 billion dollars in several of the last few fire seasons. This level of spending approaches 40 to 50 percent of the total Forest Service budget and is a large increase compared to levels expended in the recent past. In the Blue Mountains between

1960 and 1979, the average annual acres burned (wildfire) was 4,400 acres. This increased to 26,500 acres per year during the period of 1980 to 2000.

Sixty percent of the Blue Mountains is classified Fire Regime 1. Historically, 5 to 15 percent of the dry upland forest had the potential for high severity fires. Based on forest inventory and the forest vegetation simulator fire/fuels modeling, 40 to 60 percent of the dry upland forest now has the potential for high severity fire as a result of the abundance of multi-storied stands with high stocking levels. Forty percent of the dry upland forest has a high negative departure from sustainable stand conditions. The amount of potential stand replacing fire in the dry upland forest threatens the attainment of desired conditions for vegetation structure and economic outputs. The potential for high severity fire in the moist and cold upland forest environments (Fire Regimes 3 and 4) is currently close to what is estimated for historic levels (Countryman 2008).

Desired Condition: Wildland fire (planned and unplanned ignitions) plays an ecological role in creating the resilient forest and rangeland conditions needed to adapt to the conditions that result from climate changes. Table 2 displays the desired condition ranges for wildland fire within the categories of fire severity, fire frequency, and the amount of high severity fire by potential vegetation group. The range of desired conditions displayed allow for variation in the mix of fire severity, frequency, and amount of stand-replacing wildfire (high severity) by potential vegetation group across the landscape to respond to potential changes in climate. Wildland fire may be suitable on all acres, depending on expected fire effects and resource objectives.

Scale: Subwatershed for fire regime condition classes 1 and 2, watershed for fire regime condition class 3, and subbasin for fire regime classes 4 and 5.

Table 2. Desired conditions for wildland fire* severity and frequency within each potential vegetation group

Potential Vegetation Group	Fire Regime Condition Class	Fire Severity	Fire Frequency (years)	High Severity fire (percent acres burned)
Cold upland forest	4IV	mixed-high	100-200	40-80%
Moist upland forest	III	mixed	30-150	20-40%
Dry upland forest	I	low-mixed	5-25	5-15%
Dry upland woodland	III	mixed	80-160	25-45%
Cold upland shrubland	III-IV	mixed-high	30-60	30-100%
Moist upland shrubland	II-III	mixed-high	10-40	30-100%
Dry upland shrubland	II	high	20-40	20-80%
Cold upland herbland	4IV	high	30-80	55-100%
Moist upland herbland	II	high	20-40	20-80%
Dry upland herbland	II	high	5-20	40-80%
Cool/Cold riparian forest	III-IV	mixed-high	100-200	40-90%

* planned and unplanned ignitions

Desired Condition: Fire regime condition class measures the degree of departure from the historical range of variability for vegetation characteristics, fuel composition, fire frequency, severity and pattern, and other associated disturbances. In landscapes that exhibit a moderate or high degree of departure (condition class 2 or 3), the degree of departure is decreased to low or moderate (condition class 1 or 2). In landscapes that exhibit a low degree of departure (condition

class 1), conditions are maintained over time. Over the long-term, landscapes exhibit a low degree of departure (condition class 1) from the historical range of variability. Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) and mimic the natural fire regime. Composition and structure of vegetation and fuels characteristics are similar to the conditions that existed under the historical fire regime. Risk of loss of key ecosystem components is reduced.

Scale: Minimum scale of subwatershed. Scale may be changed to watershed or subbasin level if justified as more appropriate through project analysis.

1.4.2 Insects and Disease

Background: Forestland susceptibility to major insects and disease disturbances is heavily influenced by stand and landscape-level tree species composition, stand density, and stand structure, which can be affected by timber harvest, grazing, climate change, and fire suppression (Hessberg et al. 1999). Some past management activities in the Blue Mountains have led to unanticipated large, landscape-level changes and have increased the potential for uncharacteristic disturbances from insects and disease across the landscape.

Existing Condition: At the subbasin level, there have been increases in susceptibility, duration, extent, and severity of disturbances from bark beetles, defoliators, mistletoes, and root diseases due to increased cover, connectivity, stand densities, and multi-storied canopies of Douglas-fir and grand fir dominated stands (Hessberg et al. 1999). There is also a continued loss of whitebark pine and western white pine due to blister rust. Recent plan modeling of the potential mortality from disturbances from insects and disease indicates that approximately 30 percent of the forest stands in the Blue Mountains have the potential to have more than 25 percent of their total volume killed in the next 10 years. The dry upland forest environment has a much larger level of predicted losses than the moist and cold upland forests (Countryman and Justice 2008). All of these changes have created landscapes more susceptible to uncharacteristically severe disturbances that potentially affect the ability to sustain wildlife habitat, recreational use, fisheries resources, and the flow of products from National Forest System lands.

Desired Condition: Characteristic levels of insect and disease activity contribute to diverse landscape conditions and provide important wildlife habitat components, such as hollow trees, dead wood, and mistletoe brooms. The desired conditions for vegetation structure, stand density, and species composition (displayed in tables 12 through 16 of the forest plan) create stand conditions with low to moderate susceptibility to insects and diseases across the majority of the upland forest potential vegetation groups. These stand conditions result in ecologically resilient forests with composition, structure, and density characteristics that are fully compatible with periodic disturbance occurring at characteristic levels of severity, intensity, size, and spatial distribution.

Scale: Minimum scale of subwatershed. Scale may be changed to watershed or subbasin level if justified as more appropriate through project analysis.

1.5 Invasive Species

Background: Invasive species (aquatic, terrestrial, invertebrate, and vertebrate plants and animals) are recognized as a major threat to native plant and animal communities, as well as social and economic conditions. The effects of invasive species can cause reductions in long-term productivity of the land, cause economic loss, disrupt recreational use, and reduce resource production. A wide range of species can be invasive, including plants, fish, animals, insects,

fungi, mussels, and pathogens such as white pine blister rust. Some species are commonly transported between water bodies by recreational boating and fishing activities

Existing Condition: The area affected by invasive plant species has increased throughout the Interior Columbia Basin during the last 100 years (Quigley and Arbelbide 1996). The same trend has also occurred in the Blue Mountains during the last 10 to 15 years. A large portion of the Blue Mountains is characterized as being susceptible to invasive plants (Quigley and Arbelbide 1996). The susceptibility is most prevalent in areas dominated by dry forest, dry grass, dry shrub, and cool shrub types, which are the types of sites that many invasive species evolved in and are adapted to. The current level of invasive plant species in the Blue Mountains is about 55,000 acres (this figure includes some overlap between species).

Other examples include the invasive insect balsam woolly adelgid that affects 40,000 to 60,000 acres per year in the Blue Mountains from 2005 to 2006 and causes substantial mortality in high-elevation true firs.

Invasive aquatic pathogens, plants, and animals are not yet widespread in the headwater streams and lakes of the Blue Mountains. However, many highly invasive aquatic species are well established in neighboring states, in the Columbia River, and in the lower reaches of major tributaries adjacent to the national forests. Streams and springs within the national forests are at risk of invasion by detrimental invasive organisms, such as New Zealand mudsnails and Asian clams. Lakes and reservoirs are at risk of invasion by zebra mussels, hydrilla, and other highly undesirable introduced plant and animal species.

Desired Condition: Healthy, native and desired nonnative animal communities and native plant communities dominate the landscape and are resilient given current and projected climate conditions. Invasive species (aquatic and terrestrial, plant and animal) are absent or occur in small areas. Invasive species do not jeopardize the ability of the national forests to provide the goods and services communities expect or the habitat that plant and animal community diversity depends upon. New invasive species resulting from changes in plant and animal habitats due to changes in climate occur only at low levels.

Scale: Watershed scale.

1.6 Structural Stages

Background: The structural arrangement of vegetation, both vertical and horizontal, and the size and arrangement of trees, grasses, and shrubs is an important component related to wildlife habitat, insects and disease, wildfire hazard, scenic integrity, and potential social and economic products, such as timber and culturally significant foods. The structural classes in table 3 represent the full spectrum of structure from young to old stands.

For forested environments, this includes stand initiation (bare ground to young stands less than 5 inches d.b.h.), stem exclusion (single layer stands from 5 to 20 inches d.b.h.), understory reinitiation (multi-storied stands from 5 to 20 inches d.b.h.) old forest multi-story (multi-storied stands with an overstory generally greater than 20 inches d.b.h.), and old forest single-story (single-storied stands with an overstory generally greater than 20 inches d.b.h.). Figure 2 desrcbes the various structural stages as does the glossary. These definitions include both size and trees per acre and sometimes include age.

Existing Condition: In the Blue Mountains many changes to forest stand structure have occurred due to disturbances, such as wildfire, timber harvest, and insects and disease disturbances. There

has been a loss of large (20 inches d.b.h. and larger) and medium (15 to 20 inches d.b.h.) trees across the landscape. The old forest single-story stage within the dry upland forest PVG has been greatly reduced from pre-1900 levels. The amount of old forest within the moist and cold upland forest potential vegetation groups is believed to be within the range of what occurred historically on the landscape, although there have been shifts from single-storied to multi-storied conditions in many areas.

Some of the most significant changes in forested structural stages have occurred in the dry upland forest environment. Within the dry upland forest potential vegetation group, the percent of the potential vegetation group in the understory reinitiation stage ranges from 50 to 54 percent in the Blue Mountains, compared to a desired condition of 0 to 5 percent. Within the dry upland forest potential vegetation group, the percent of the potential vegetation group in the old forest single-story structural stage ranges from 1 to 4 percent in the Blue Mountains, compared to a desired condition of 40 to 65 percent. Most of the reduction in old forest structure occurred prior to 1993 due to harvesting and wildfire. Since then, the primary loss of old forest on National Forest System lands in eastern Oregon and Washington has been due to insects, diseases, or wildfire.

Structural classes in the shrubland environment have shifted toward one that has higher levels of older plants due primarily to fire exclusion and grazing.

All of these changes have led to reductions in habitat for some wildlife species, increases for others, reductions in the output of products, and decreases in scenic quality due to the increased occurrences of uncharacteristically severe disturbances (insects, disease and wildfire). Having fewer large diameter old trees has led to decreases in habitat for certain species and fewer stands that are more resistant to wildfire. Having more multi-storied stands has contributed to the increased susceptibility to more severe wildfire.

Desired Condition: The distribution and abundance of forested structural stages creates conditions that are ecologically resilient, sustainable, and compatible while maintaining disturbance processes within the desired conditions. Table 3 displays the desired conditions for the percent of each upland forest or woodland potential vegetation group in each of the forested structural stages. The range of desired conditions allows for variations in the mix of structural stage combinations across the landscape to respond to potential changes in climate.

Table 3. Desired conditions for forested structural stages, described as a percent of each upland forest or woodland potential vegetation group

Potential Vegetation Group	Stand Initiation	Stem Exclusion	Understory Reinitiation	Old Forest Single Story	Old Forest Multi-story
Cold upland forest	20-45	15-30	10-25	5-20	10-25
Moist upland forest	20-30	20-30	15-25	10-20	15-20
Dry upland forest	15-30	10-20	0-5	40-65	1-15
Dry upland woodland	5-10	10-20	1-5	20-40	30-50

Within the cold and moist upland forest potential vegetation groups, the desired diameter distribution within the stem exclusion and understory reinitiation stages is to have equal representation in the 5 to 10, 10 to 15, and 15 to 20-inch diameter classes. Figure 2 describes the forested structural stages.

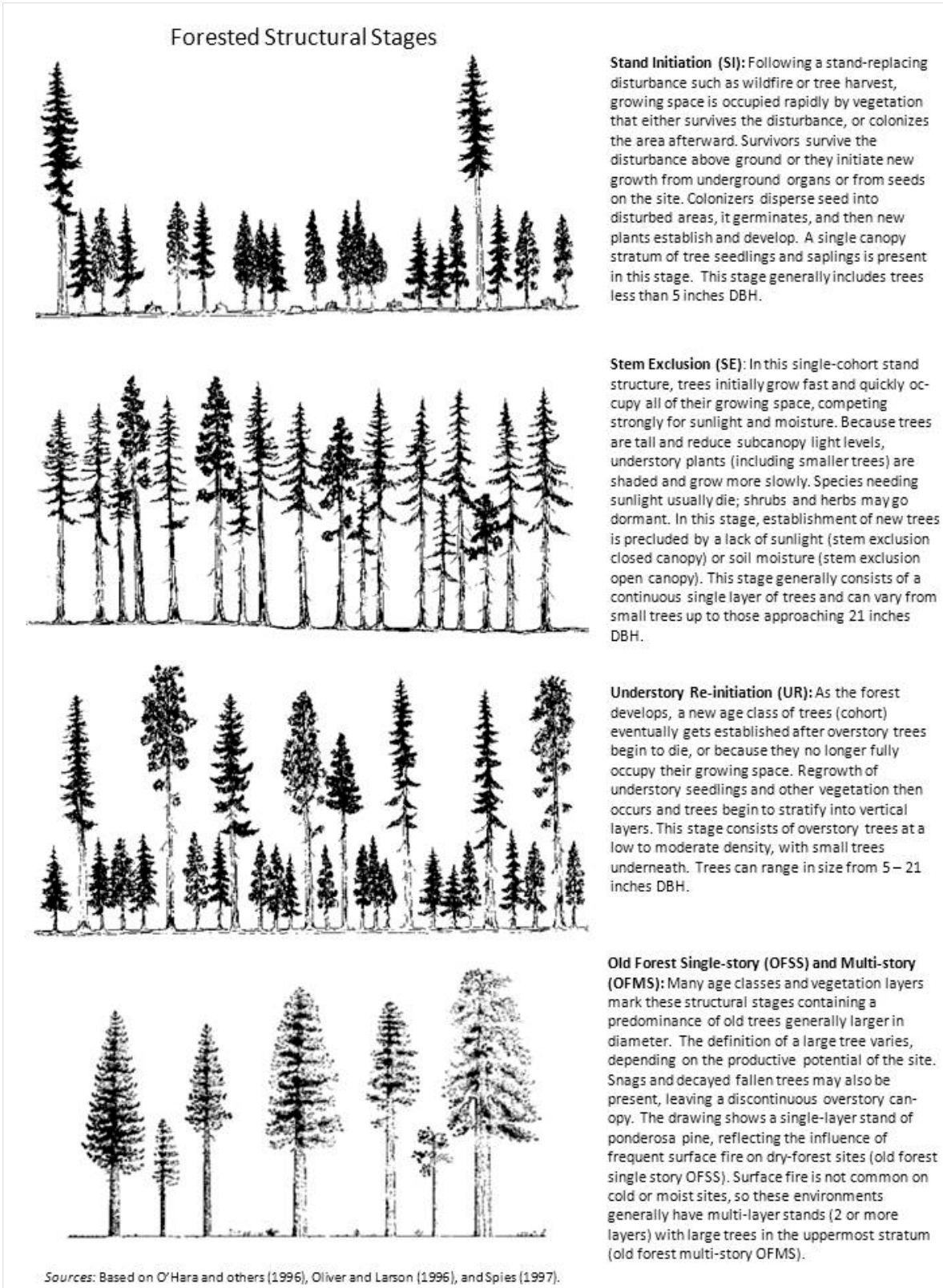

Figure 2. Description of forested structural stages used to classify vegetation for the Blue Mountains national forests plan revision

Within the dry upland forest potential vegetation group, the desired diameter distribution within the stem exclusion and understory reinitiation stages is: 25 percent in the 5 to 10 inch diameter class, 25 percent in the 10 to 15 inch diameter class, and 50 percent in the 15 to 20 -inch diameter class.

Scale: Minimum scale of subwatershed. Scale may be changed to watershed or subbasin level if justified as more appropriate through project analysis.

Desired Condition: The distribution and abundance of herbland and shrubland structural stages create conditions that are ecologically resilient, sustainable, and compatible with maintaining disturbance processes within the desired conditions. The structural diversity of herblands and shrublands are characteristic of the settings in which they occur and the disturbance regimes in which they developed. These conditions support the capacity of the plants to reproduce and persist on the landscape. Variations in the mix of structural stage combinations across the landscape allow herblands and shrublands to respond to potential changes in climate. The desired conditions for structural stages include shrubland and herbland potential vegetation groups, as well as grass and shrub layers in forested environments.

Scale: Herbland and shrubland desired conditions should apply at the project scale (minimum of 1,000 acres).

1.7 Plant Species Composition

Background: The vegetative species composition within different vegetation groups (forested and nonforested) can be directly correlated to wildfire, and insects and disease hazard. Much of the increase in insects and disease activity and resultant mortality is due to the increase in grand fir within dry upland forest. Grand fir is highly susceptible to defoliators, root diseases, fir engraver beetle, stem decay, and other insects and disease agents. Drought and excessive stocking will exacerbate mortality caused by these agents. Species composition can also influence landscape diversity, scenic diversity, and the availability of socially desired products. Desired ranges of species composition were developed through the use of a model that projected historic species composition based on historic disturbances. Desired species composition is also based on estimates that would create a more sustainable condition.

Table 4 displays the desired conditions for species composition, described as a percent of each upland forest potential vegetation group. Table B-12 in appendix B contains a crosswalk of cover type to species composition/shade tolerance classes by potential vegetation group.

Existing Condition: At the subbasin level, there have been increases in the distribution of Douglas-fir and grand fir (Hessberg 1999) on sites historically dominated by ponderosa pine. The abundance of juniper has increased on many sites that were historically dominated by sagebrush. The distribution of aspen has decreased and the recruitment of younger aspen trees is declining due to conifer encroachment, browsing, and the exclusion of wildfire. Whitebark pine has decreased due to white pine blister rust, mountain pine beetle mortality, and competition with subalpine fir. Western white pine, although abundant in small localized areas, has a limited abundance at the larger landscape level. This level of white pine at the landscape level is consistent with estimated historic levels, although in localized areas within the Malheur National Forest, current levels are estimated to be significantly lower than historic levels. While these vegetation conditions may be visually intact, these conditions are unstable and are likely to negatively alter scenic character.

In the Blue Mountains, many landscape and forest stand-level species compositions have been modified by past logging of overstory ponderosa pine and western larch, wildfire suppression, grazing, and the introduction of invasive plant species. Planning efforts at the subbasin, basin, and watershed scale have documented increases in conifer encroachment onto herbland, shrubland, and woodland landscape types. Within the dry upland forest potential vegetation group, the percent of the potential vegetation group in shade-tolerant species ranges from 24 to 55 percent in the Blue Mountains, compared to a desired condition of 5 to 20 percent. Changes such as this in the existing species composition have created a landscape that is less sustainable than what is desired and is more susceptible to larger scale uncharacteristic disturbances. As with some of the other indicators, some of the most significant differences between the existing condition and the desired condition occur in the dry environment.

Desired Condition: The mix of species composition tolerance classes across the landscape creates conditions that are ecologically resilient, sustainable, and compatible with maintaining disturbance processes within the desired conditions. Sites having the potential to support forested vegetation now and in the future, given regional climate projections, are occupied by stands of trees within the ranges displayed in table 4. Table 4 displays the desired condition ranges for the percent of each upland forest or woodland potential vegetation group in each of the species composition tolerance classes. The range of desired conditions allows for variations in the mix of species/composition tolerance class combinations across the landscape to respond to potential changes in climate.

Table 4. Desired conditions for species composition, described as a percent of each upland forest or woodland potential vegetation group

Potential Vegetation Group	Shade-intolerant Species Composition	Mixed-tolerant Species Composition	Shade-tolerant Species Composition
Cold upland forest	40-60	5-20	25-50
Moist upland forest	30-60	20-40	10-30
Dry upland forest	75-90	0	5-20
Dry upland woodland	75-90	0	5-20

Scale: Minimum scale of subwatershed. Scale may be changed to watershed or subbasin level if justified as more appropriate though project analysis.

The mix of species in the grass and shrub layer of forests, as well as shrubland and herbland vegetation, contain a diverse array of native species distributed across the landscape reflecting historical conditions. Perennial native bunchgrasses dominate many grass and shrublands. Native grasses, grass-like plants (sedges and rushes), forbs and various shrubs characterize the forest understory. Riparian zones consist of meadows with obligate wetland species including native grasses, sedges and rushes, riparian hardwoods and structurally diverse shrublands.

1.8 Stand Density

Background: Stand density (canopy cover, trees per acre, or basal area) is an important component of wildfire, wildlife habitat, insects and disease disturbance, and stand structure. It can also be directly linked to vegetation health, hazard indices, and product outputs.

Stand density refers to a measure of the amount of tree vegetation of a unit of land area (Curtis 1970, Ernst and Knapp 1985, and Powell 1999). One measure of stand density is percent canopy cover. Canopy cover refers to the proportion of the forest floor covered by the vertical projection

of tree crowns (Jennings et al. 1999). Within the dry upland forest potential vegetation group, closed stand density was defined as those stands having 40 percent canopy cover or greater. Within the moist and cold upland forest potential vegetation groups, closed stand density was defined as those stands having 60 percent canopy cover or greater. Percent canopy cover could be equated to other measures of stand density, such as percent of maximum stand density index or basal area.

Existing Condition: Generally, average tree diameters have decreased and the average forest stand density has increased from estimated pre-1900 levels due to timber harvest and fire suppression. Within the dry upland forest potential vegetation group, the percent of the potential vegetation group in closed stand densities ranges from approximately 40 to 70 percent in the Blue Mountains, compared to a desired condition of 5 to 20 percent. The major changes during the last 100 years across the Blue Mountains may have reduced biodiversity and created a landscape condition dominated by dense and multi-storied stands, creating a visual composition that lacks diversity and is atypical of historic mosaic conditions. These changes are most apparent in the dry upland forest types. This contributes to the potential for uncharacteristically severe and large disturbances due to wildfire, insects, and disease. These conditions could create an unsustainable system.

Desired Condition: The range of vegetation densities across the landscape creates conditions that are ecologically resilient, sustainable, and compatible with maintaining disturbance processes within the desired conditions. Table 5 displays the desired condition ranges for the percent of each upland forest or woodland potential vegetation group in each of the stand density classes (open or closed). The range of desired conditions allows for variations in the mix of vegetation density combinations across the landscape to respond to potential changes in climate. Low-density vegetation is more likely to survive possible future drought stress, fires, and insects and disease outbreaks.

Table 5. Desired conditions for stand density, described as a percent of each upland forest or woodland potential vegetation group

Potential Vegetation Group	Open Stand Density	Closed Stand Density
Cold upland forest	20-30	65-80
Moist upland forest	30-40	60-80
Dry upland forest	80-90	5-20
Dry upland woodland	80-90	5-20

Note: Dry upland forest closed stand density is 40 percent canopy cover or greater. Cold and moist upland forest closed stand density is 60 percent canopy cover or greater.

Scale: Minimum scale of subwatershed. Scale may be changed to watershed or subbasin level if justified as more appropriate through project analysis.

Desired Condition: The distribution and abundance of vegetation density within herblands and shrublands create conditions that are ecologically resilient, sustainable, and compatible with maintaining disturbance processes within the desired conditions. These conditions support the capacity of the plants to reproduce and persist on the landscape. Variations in the mix of vegetation density combinations across the landscape allow herblands and shrublands to respond to potential changes in climate. The desired conditions for vegetation density includes shrubland and herbland potential vegetation groups, as well as grass and shrub layers in forested environments.

Scale: Herbland and shrubland desired conditions should be applied at the project scale (minimum of 1,000 acres).

1.9 Air Quality

Background: Air quality is measured by the concentration of substances that are known to be harmful to the health and welfare of humans and the environment. Human-caused sources of air pollution, such as vehicle emissions, large and small industrial sources, and open burning, produce a number of air pollutants, including nitrous oxides, sulfur dioxide, carbon monoxide, and many other organic chemical compounds.

Smoke, which includes fine particulate emissions from wildland fire (planned and unplanned ignitions), results in reduced visibility and haze at lower concentrations and can be hazardous to human health at moderate concentrations. Federal and state standards include protection of air quality-related values in Class I areas (wilderness areas greater than 5,000 acres that existed on or before August 1977; in the Blue Mountains this includes the Strawberry Mountain, Eagle Cap, and Hells Canyon Wilderness Areas). In the Blue Mountains, the primary national forest activity influencing air quality is smoke production from wildfires and prescribed fires. Smoke from the national forests cannot be eliminated. The main objectives of fuel reduction activities within the national forests are to lessen the total amount of annual smoke emissions, to reduce the risk of high-severity wildfires, and to lower the potential of smoke impacts to local communities and other smoke-sensitive areas.

Existing Condition: Smoke emissions from wildfires can vary greatly from year to year, while annual smoke emissions from prescribed fires are less variable. Both have the potential to affect local community and regional air quality.

Desired Condition: National forest air quality complies with national and State (Oregon, Idaho, and Washington) ambient air quality standards and State air quality and smoke management plans (ODF 2008) and is sufficient to protect human health and the environment.

Minimize smoke intrusions in smoke-sensitive receptor areas. Smoke-sensitive receptor areas are generally defined as communities with populations of more than 10,000. In the Blue Mountains, this includes Baker City, La Grande, John Day, and Pendleton. Outside of smoke-sensitive receptor areas, the intent of the Oregon and Washington Smoke Management Plan is to limit the intensity and duration of smoke intrusions in order to minimize smoke exposure to humans at their place of residence or at places where they normally gather.

Air quality in Class I areas is consistent with Clean Air Act regulations and meets applicable state and Federal air quality standards.

Scale: Smoke emissions are relevant at the scale of the Blue Mountains as well as the local airsheds surrounding local communities and the broader areas that encompass designated wilderness areas.

1.10 Soil Quality

Background: Soils develop during long time periods (from decades to centuries), depending on local site characteristics, including climate, the nature of geological parent material (rock type), the actions of living organisms (including vegetation, soil organisms, and microbes), topography, and weathering and decomposition processes (Brady 1990, Harvey et al. 1994). The biological, physical, and chemical properties of soils contribute to both the biological productivity of plant

communities and the hydrologic functioning of watersheds. In addition, soils likely store as much carbon as is contained in above ground vegetation and, as a result, are important when considering the effects of climate change.

Decomposition of organic material is the principal source of nutrients in soil and varies with vegetation type, stand age in forested settings, species composition, and fire history (Jurgensen et al. 1997). In forested watersheds, wildfires were historically important in creating vegetative patches of differing plant community types and stages of succession, as well as in ensuring the availability and recycling of soil nutrients. Important properties include soil depth, organic matter content, nutrient content, ground cover (litter), soil texture, water holding capacity, and infiltration capacity, all of which have biological and physical importance (Childs et al. 1989, Meurrisse et al. 1990). Soil properties vary greatly across the landscape and between different soil types.

Surface soil erosion and sediment delivery to streams are common contributors to reduced water quality (Coats and Miller 1981). Sediment in streams can increase water treatment costs where water is used for human consumption (Forster et al. 1987) but is more commonly known for effects on aquatic habitats (Bisson and Bilby 1982, Bjornn and Reiser 1991, Cordone and Kelly 1961, Waters 1995).

High intensity wildfires may result in elevated post-fire water temperatures (Dunham et al. 2007), channel incision (Moody and Kinner 2006), greatly elevated erosion rates (MacDonald and Robichaud 2008, Shakesby and Doerr 2006) and loss of soil carbon and nitrogen (Bormann et al. 2008).

Existing Condition: The quality of national forest soils across the Blue Mountains has been affected to varying degrees by past land uses, such as livestock grazing, the introduction of nonnative plant species, timber harvesting, road construction, mining, wildfire suppression, and off-highway vehicle use. The effect of these activities is reduced ground cover, altered vegetative conditions, increased soil erosion rates, and depressed soil productivity and hydrologic function.

Desired Condition: The productive potential of forest and range soils is maintained at levels that contribute to long-term sustainability of ecosystems considering the range of possible climate change scenarios. Soil physical and chemical properties (texture, porosity, strength, coarse fragment content, and fertility) and organic matter (surface woody debris, humus) are at levels that maintain soil productive potential and hydrologic function (infiltration, percolation, and runoff).

Surface erosion rates and sediment deposition are within the natural range of variability for each biophysical setting.

Scale: Subwatershed to watershed depending on the severity of the disturbance.

1.11 Water Quality

Background: Water quality is regulated nationally by authority of the Clean Water Act. Water quality criteria are established by the individual states and some tribes for the protection of aquatic species and humans. Water quality criteria vary depending on the beneficial use of water. For example, the criteria for irrigation use, domestic use, and coldwater fisheries are all different.

For aquatic species, water quality concerns include elevated stream temperature, elevated fine sediment levels, and the availability of nutrients on which aquatic food webs are based. Rivers

that originate from within the national forests are used for irrigation of agricultural crops and for human consumption. These rivers must meet appropriate water quality criteria for those uses. Ongoing protection of water quality in domestic supply watersheds and protection and enhancement of riparian areas is a priority.

Existing Condition: The primary designated beneficial use of water on National Forest System lands in the Blue Mountains is for cold-water fish habitat. More than 1,200 stream miles are listed as not meeting water quality criteria for this use due to elevated stream temperatures. Fewer than 100 stream miles are listed due to excess stream sedimentation. The flow regimes of many streams are affected by dams and water diversions. Removal of instream wood, changes in channel morphology, loss of floodplain connectivity, and alteration and loss of riparian vegetation all contribute to declines in water quality.

Desired Condition: Water quality of surface and groundwater is sufficient to support healthy riparian, aquatic, and wetland ecosystems. It is within the range that maintains the biological, physical, and chemical integrity of the system and is capable of benefiting the survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

The quality of water emanating from the national forests is sufficient to provide for state-designated beneficial uses, including human uses.

Water quality in streams within the national forests is sufficient to meet applicable state, local, and tribal water quality criteria.

Scale: Forestwide.

1.12 Landscape Patterns

Background: Landscapes are ecological units with structure and function and are composed primarily of patches that differ in origin, dynamics, size, shape, and spatial orientation (Forman and Godron 1981). Landscape patterns or landscape heterogeneity is the spatial patchiness and variability in the landscape patterns, and it can occur at multiple spatial scales (Benton et al. 2003). Landscape heterogeneity that resembles natural patterns has been shown to provide for greater biodiversity (Fischer et al. 2006).

Issues of landscape fragmentation and patch connectivity are a concern in conservation biology (Forman and Godron 1986). Hann et al. (1998) found that when land use, ecosystem health, and species diversity are out of balance with inherent disturbance processes and biophysical capabilities, the landscape ecosystem tends toward unbalance. Hemstrom et al. (2001) concluded that past types and levels of human use have caused extensive changes and have run counter to the historical ecological conditions.

The basic foundation of landscape patterns involves an understanding of patches and patch dynamics. Patches are areas of similar vegetation and environmental conditions while patch dynamics is the process in which a patch interacts with the surrounding area (Morrison et al. 1992, ICBEMP SDEIS 2000).

Landscape patterns can influence disturbance processes, nutrient cycling, and plant and animal distribution (Gosz et al. 1999 in Szaro et al. 1999). Landscape patterns determine how, where, and when vertebrate and nonvertebrate species utilize a given area. Landscape patterns influence the movement of species across the landscape. Landscape patterns are dynamic and are influenced by both natural and human-induced disturbances. Wildfires of different intensities, along with

storms, windthrow, and insects, created complex and shifting mosaics of forests across the landscapes of the Blue Mountains (Langston 1995).

Landscape patterns are a major factor that contribute to scenic character. Unnaturally appearing patterns, such as clearcuts, mine tailings, and roadways, reduce scenic integrity. This detracts from valued scenery that is viewed from scenic byways, communities, and important recreation sites.

Existing Condition: Patch size of dry and moist old forest structure in the Blue Mountains has decreased and isolation and fragmentation has increased primarily due to timber harvest and wildfire. These changes are most evident in the portions of the landscape that are actively managed, which also may result in low scenic integrity in these areas within the Blue Mountains. Wisdom et al. (2003) found that fragmentation and homogenization of patches may be of substantial concern within the Columbia Basin. Within the basin, the highest departure of fragmented landscapes occurred in watersheds at lower elevations. These watersheds made up 16 percent of the Columbia Basin. The watersheds with the least departure occurred at higher elevations, primarily within existing wilderness areas and undeveloped areas.

Less than 10 percent of the old forest landscape is in patches greater than 300 acres. The percent of the landscape in young forest patches less than 40 acres exceeds 50 percent. The high percentage in the less than 40 acres category is a result of the National Forest Management Act requirement that limits the size of regeneration harvests to less than 40 acres.

Desired Condition: Landscape patterns are spatially and temporally diverse and have a positive influence on overall ecological function and scenic integrity. Landscape patterns provide a connectivity, allowing animals to move across landscapes. Landscape patterns are resilient and sustainable, considering the range of possible climate change scenarios.

Scale: Forestwide.

1.13 Special Plant Habitats

Background: Special habitats are unique groups of living organisms and nonliving attributes that are limited in geographic extent, such as legacy trees, caves, cliffs, talus slopes, specific plant communities, and soil types. The ICBEMP DEIS referred to special habitats as special features (Giannettino and Middaugh 2000). Oregon and Washington both completed conservation strategies in 2005 (ODFW 2006 and WDFW 2005). Both of these strategies identify specialized and rare habitats for these areas that occur within the Blue Mountains, as well as conservation actions. A listing of these areas is included in the project record.

A wide variety of special habitats occurs across the Blue Mountains, and these habitats are important for sustaining ecosystem function. Some special habitats are a result of or are affected by disturbances. Other special habitats, such as rock outcrops, may be indirectly affected by disturbance. Depending on the extent and intensity of the disturbance, many special habitats are either created or pushed back in the successional pathway.

Legacy trees are old trees that have been spared or have survived stand replacing natural disturbances (Mazurek and Zielinski 2004). Legacy trees provide important foraging and breeding habitat in managed timber stands.

Some of the special habitats are associated with water and riparian areas (i.e., wetlands, small and larger bodies of water, springs, seeps, and bogs). These types of special habitats are discussed in section "1.1 Watershed Function."

The special habitats tend to be small in area and localized in distribution.

Desired Condition: Special plant habitats include mountain mahogany, aspen, cottonwood, sagebrush steppe, and whitebark pine. They provide high quality habitat for associated species. The distribution and abundance of structural stages and vegetation density classes within these special plant habitats are consistent with their HRV and create conditions that are ecologically resilient, sustainable, and compatible with maintaining disturbance processes within the desired conditions. Variations in the mix of structural stages and vegetation density combinations across the landscape allow special plant habitats to respond to potential changes in climate.

Whitebark Pine

Desired Condition: There is no net loss in whitebark pine habitat on NFS lands. Genetic diversity is conserved across the landscape. Degraded habitat and connectivity are restored wherever necessary, including in designated wilderness. Populations exhibit an increase in age class diversity. The risk of mortality from mountain pine beetle and stand-replacing fire is reduced. Resistance to white pine blister rust is increased. (Aubry et al. 2008, Keane et al. 2012.)

Fire may be used as one tool to achieve these desired conditions. Minimize negative impacts to whitebark pine resulting from fire suppression activities.

Scale: The identification and protection of whitebark pine special plant habitats are primarily accomplished at project level planning. The sustainability of special plant habitats is best addressed at the forestwide scale utilizing consideration of the best available climate projections.

Aspen

Desired Condition: The amount of aspen forest area is increased across the landscape. Genetic diversity is maintained through preservation of existing clones. The distribution and abundance of age and structural classes are consistent with the HRV and create conditions that are ecologically resilient, sustainable, and compatible with maintaining disturbance processes within the desired conditions (see Table 6). Aspen clones older than 80 years old that are healthy and adequately stocked would generally not be regenerated to achieve the desired conditions for the percent of aspen forest area in age classes less than 80 years old. Fire may be used as a tool to achieve these desired conditions. Protection of suckers from ungulate browsing is critical for survival of aspen regeneration, generally for a minimum of 10 years.

Table 6. Desired conditions for age and structural composition of aspen

Age (Years)	Structural Class	Percent of aspen forest area
0-40	SI	45-50
40-80	SE, UR	45-50
80+	OFMS, OFSS	5-10

Source: Swanson et al. 2010

Scale: The identification and protection of aspen special plant habitats are primarily accomplished at project level planning. The sustainability of special plant habitats is best addressed at the forestwide scale utilizing consideration of the best available climate projections.

Sagebrush Steppe Special Habitat

Background: Sagebrush habitats in eastern Oregon are both extensive and diverse, ranging from low elevation valleys to high mountain areas and from grassland-like shrub-steppe to relatively dense shrublands. In addition, there are many species of sagebrush. For example, in the Blue Mountains, sagebrush shrubland species vary by elevation and soils but include low sagebrush, sliver sagebrush, rigid sagebrush, basin big sagebrush, Wyoming big sagebrush, mountain big sagebrush, threetip sagebrush, bitterbrush, and rabbitbrush. Altered fire regimes, invasive plants, human development, and climate change are the primary stressors to sagebrush.

Sagebrush habitats have been reduced by more than 21 percent in Oregon from the late 1850s (Hagen 2011). Much of the loss has been due to conversion to agriculture and the conversion of lands to other exotic forbs and annual grasses (Wisdom et al. 2000). More than 90 percent of the sagebrush steppe community currently occurs within BLM and private lands, while only eight percent occurs within National Forest System lands, U.S. Fish and Wildlife Service administered lands, and Oregon Department of State Lands.

Existing Condition: As indicated previously, there are several sagebrush communities in the Blue Mountains, not all of which would be part of the sagebrush steppe special habitat. For example, the mountain big sagebrush/elk sedge plant community is a high elevation community found on gentle to steep mountain slopes above 5,000 feet (Johnson and Clausnitzer 1992). Within National Forest System lands in the Blue Mountains, the sagebrush steppe habitat occurs on less than 1 percent of the Wallowa-Whitman and the Umatilla National Forests and occurs on approximately 6 percent of the Malheur National Forest.

Desired Condition: There is no net loss of sagebrush steppe habitat on NFS lands and 70 percent of the existing sagebrush rangelands are in later structural stages (sagebrush classes 3, 4, and 5). The remaining 30 percent of the landscape includes areas of juniper encroachment, nonsagebrush shrub lands, annual grasslands, and nonnative perennial grasslands that potentially could be rehabilitated and enhanced as sagebrush habitat. The understory is comprised of native species, resulting in conditions that are sustainable and resilient to disturbance (i.e., they are capable of recovering to their potential community without intervention after a disturbance).

Scale: The identification and protection of sagebrush steppe special habitat is primarily accomplished at project level planning. The sustainability of special plant habitats is best addressed at the forestwide scale utilizing consideration of the best available climate projections.

1.14 Snags and Down Wood

Background: Snags (standing dead trees) and down wood are critical elements of healthy, productive, and biologically diverse forests (Bull et al. 1997). Thomas et al. (1979) found that 179 wildlife species use snags and down wood within the Blue Mountains. These species depend on snags and down wood for foraging, denning, roosting, and nesting habitat. Down wood also stores nutrients and moisture and aids in soil development. Levels of snags and down wood can affect the sustainability of particular animal or plant species.

Table 7 displays the desired condition for down dead wood across the landscape. The desired condition varies based upon potential vegetation groups, size of the dead down wood, and amount

of the dead down wood to be found the across the landscape. The table illustrates that the desired condition for the majority of the landscape is to have less than 20 tons of down wood per acre with the majority of course woody debris being less than 10 inches in diameter.

The ranges were developed from Current Vegetation Survey (CVS) inventory plot unharvested data and blended with levels that are sustainable given the wildfire desired conditions. The categories of potential vegetation groups were based on those used in DecAID (Marcot et al. 2002). The lodgepole category is recognized by DecAID, and is listed in the table as a potential vegetation group, but in the Blue Mountains classification system, it is not recognized as a potential vegetation group. It instead is classified as a cover type that is transitional to either the cold or moist forest potential vegetation groups. The desired characteristics for the lodgepole cover type are different enough from either cold or moist forest that it is necessary to separate it as is done in DecAID.

Table 8 and table 9 display the desired percentages of the landscape that should occur within the different categories (ranges of dead trees per acre) within the different potential vegetation groups. The potential vegetation discussion for this table is the same as in the preceding paragraph.

Existing Condition: Analysis conducted as part of the Interior Columbia Basin Ecosystem Management Project reveals the following information regarding the historical distribution of snags:

- Small snags have increased on Forest Service or Bureau of Land Management administered lands (7 percent).
- Small snags have decreased across the basin (14 percent).
- Large snags have decreased on Forest Service or Bureau of Land Management administered lands (8 percent).
- Large snags have decreased across the basin (31 percent).

Most of the increase in small snag occurred within dry forests. The analysis indicated that within the Blue Mountains ecological reporting unit (ERU), small snags decreased in the north and increased in the south. Abundance of small diameter snags and small diameter down wood in the dry forest has increased because of the reduction in the amount and frequency of low intensity wildfire.

The largest decreases in large snags occurred within dry and moist forests. Large snag declines on Forest Service or Bureau of Land Management administered lands were compounded in managed and roaded areas. The decline in large snags was particularly noted within the northern portion of the Blue Mountains ERU.

Past management activities have reduced snag levels and created a higher percentage of the landscape that has low number of snags than is desired. Past activities have also reduced the percentage of the landscape with pulses of large numbers (trees per acre) of snags greater than 20 inches d.b.h.

Desired Condition: Snags and down wood occur within all of the potential vegetation groups and vegetation cover types (lodgepole) at levels identified within table 7 through table 9. Snags and down wood persist across the landscape either singularly or in patches. Snags and down wood density will be highest following disturbance events, such as wildfire, wind events, and

insects and disease outbreaks. Snags and down wood density will tend to be higher in riparian areas. Snags are the major source of down wood in both upland and riparian areas.

Snags and down wood provide habitat for the following focal species: boreal owl, pileated woodpecker, American marten, white-headed woodpecker, western bluebird, fringed myotis, Lewis's woodpecker, black-backed woodpecker, wood duck, bald eagle, and red-naped sapsucker.

Scale: The desired condition and the levels of snags and down wood presented within table 7 through table 9 can be applied at a variety of scales: forestwide, watershed, and subwatershed. During project analysis and implementation, the desired condition, along with the snag and down wood levels presented in the tables, will be used concurrently with information outlined in Part 2 (Strategy) and Part 3 (Design Criteria) within the forest plan.

Table 7. Ranges of down wood (desired condition)

Potential Vegetation Group	0-10 Tons	10-20 Tons	20-45 Tons	45-65 Tons	65-90 Tons	90-Plus Tons	Desired Residual Tons Composed of Material Greater than 12 Inches Diameter*
Cold upland forest	0-5%	70-80%	5-20%	2-4%	1-2%	1-2%	40-50%
Moist upland forest	0-5%	70-80%	5-20%	1-2%	1-2%	1-2%	50-60%
Dry upland forest	60-80%	5-15%	2-4%	1-2%	1-2%	1-2%	60-80%
Lodgepole pine forest	0-5%	80-95%	1-10%	1-10%	1-2%	1-2%	10-20%

* The intent of the 12-inch down wood portion of the desired condition is not that 12 inches exactly is needed, but instead that retention of the largest potential size class based on the size of the existing overstory trees is emphasized.

Table 8. Desired percentage ranges across the landscape of snags (dead trees) per acre 10 inches d.b.h. and greater and less than 20 inches d.b.h.

Potential Vegetation Group	1-2 Dead Trees	2-6 Dead Trees	6-10 Dead Trees	10-14 Dead Trees	14-18 Dead Trees	More Than 18 Dead Trees
Cold upland forest	45-55%	5-10%	0-1%	5-10%	1-5%	20-30%
Moist upland forest	35-45%	10-20%	0-1%	5-10%	2-5%	25-35%
Dry upland forest	65-75%	10-15%	0-1%	5-10%	1-5%	5-15%
Lodgepole pine forest	60-70%	5-10%	0-1%	5-10%	2-5%	20-30%

Table 9. Desired percentage ranges across the landscape of snags (dead trees) per acre 20 inches d.b.h. and greater

Potential Vegetation Group	1-2 Dead Trees	2-6 Dead Trees	6-10 Dead Trees	10-14 Dead Trees	14-18 Dead Trees	More Than 18 Dead Trees
Cold upland forest	70-80%	10-20%	1-3%	1-10%	2-4%	1-3%
Moist upland forest	55-65%	15-25%	2-6%	5-9%	2-6%	1-5%
Dry upland forest	75-85%	10-20%	1-3%	2-4%	1-2%	1-2%
Lodgepole pine forest	NA	NA	NA	NA	NA	NA

Goal 2: Promote Social Well-being

Social well-being contributes to national forest resilience by fostering public use patterns and restoration strategies that support human communities, livelihoods, cultures, and social values. National forests contribute to community resilience by providing jobs, ecosystem services, scenery, and recreational opportunities. Each individual's ties to the land, traditional cultures, and communities help characterize social well-being (Pierce Coffer and Byron 2001).

Attachments to places in and adjacent to the national forests reflect core values that shape and define social, economic, and ecological sustainability within the Blue Mountains and elsewhere (Endter-Wada et al. 1998). Examples include the values different people place on biodiversity, scenery, economic opportunities, self-reliance, tradition, and ecological integrity (Brown and Reed 2000). These and a suite of other values form the basis for collaborative discussions about national forest management and, ultimately, how it affects social well-being.

A diverse and complex set of values that contribute to one's social well-being can be tied to natural resources-related work, including restoration, ranching, and recreation. This work allows people to live in communities that are adjacent to the national forests. These values may include viewing or hunting wildlife, being able to do natural resource-related work, knowing that restoration efforts are supporting fish populations, and being part of an environment where human traditions and cultures can be maintained.

2.1 Scenery

Background: Scenic attributes, including identifiable patterns, distinct color, texture, and form, and elements, such as aspen stands and rock formations, are derived from specific geological features and functioning ecosystems. These features provide a scenic identity and image that is valued as a backdrop for the activities and experiences that create memories and meet expectations of national forest visitors (Bacon et al. 1974 and Ryan 2005). People value the scenery of the Blue Mountains national forests for the natural beauty, undeveloped or undisturbed scenes, and rural western setting while visiting or recreating. There are many opportunities to view historic structures and traditional uses, such as historic mining operations, ranching facilities, Civilian Conservation Corp structures, pole fences, and historic ditches. Mountainous environments and canyons that create scenes of dynamic vertical change combine with the plant communities that are present at differing elevations and with geological features, such as rock outcrops and peaks. Water features create strong visual images that are highly valued. All of these attributes and many more create patterns and mosaics that contribute to the scenery of the Blue Mountains.

Scenery is inventoried and placed into one of seven scenic classes with Scenic Class 1 being highly valued and distinctive and Scenic Class 7 being nondistinctive and valued the least. Each classification is determined by the combination of scenic attractiveness, viewpoint, viewing distance, and duration along with the frequency and/or number of viewers (USDA Forest Service 1995a). Determining this range of scenic classes allows managers to understand the social acceptability of any change in scenery.

Scenic integrity and scenic stability are two indicators used to evaluate the condition of scenery resources (table 10). Scenic integrity addresses human caused disturbances and development that may detract from the desired scenic character. Scenic stability addresses the relative stability of the valued scenic character and its scenic attributes. Further in-depth scenic character descriptions can be found in the scenery resource implementation guide and the plan record.

Scenic Integrity

Existing Condition: Impacts to scenic integrity are predominantly related to harvest activities dating before 1980. More recent harvest activities were designed to blend with the natural appearing settings. Within the Blue Mountains, 10 to 15 percent of the landscape has a low or very low Scenic Integrity Level, where visual disturbances detract from the valued scenic character. An example is a vegetation harvest unit that appears distinctly geometric and unnatural. Twenty percent of the area has a moderate Scenic Integrity Level, where openings in the vegetation are largely out of scale, but the edges are blended or are shaped in a manner that appears somewhat natural. Fifty percent of the area has a high Scenic Integrity Level, and 15 percent is very high, where the valued scenic character appears intact with no detracting visual disturbances.

Scenic Stability

Existing Condition: In many areas the long-term stability of scenery resources is at risk of large scale impacts due to conditions exacerbated by past wildfire suppression and harvest practices. The resultant conditions of homogenous, overly dense forests of nonfire-resistant species heavily laden with fuels put scenery resources at risk from uncharacteristically large, stand-replacing wildfires and insects and disease disturbances.

Forty-five percent of Scenic Class 1 has moderate scenic stability, meaning that most dominant scenery attributes of the valued landscape are present, but there are conditions that pose a threat to the stability of the attributes, such as a large-scale wildfire or disturbance from insects and disease. Less than 5 percent of Scenic Class 1 has high scenic stability, meaning that the dominant scenery attributes are present and are likely to be sustained.

Scenic Integrity and Scenic Stability

Desired Condition: Scenery is a highly valued forest resource and is quantified through the use of the scenery management system. The scenery management system provides the framework to effectively integrate scenic values and ecological considerations, to achieve a scenic integrity and scenic stability for future generations. Although the scenic resources vary by location, all activities that forest visitors experience are performed in a scenic environment composed of the natural and constructed features within the landscape. The scenery management system process involves identifying scenic components as they relate to people, mapping these components and assigning a value to aesthetics. These components are inventoried and provided guidance for the development of the desired scenic integrity and stability levels.

The following components have been inventoried for the Blue Mountains national forests:

- Landscape character descriptions
- Scenic attractiveness
- Existing scenic integrity
- Existing scenic stability
- Concern levels
- Landscape visibility
- Distance zones
- Scenic class

Scenic integrity and stability objectives are associated with public observation points such as travel routes, use areas and waterbodies.

Table 10. Scenic integrity levels and scenic stability levels (desired condition)

Scenic Class	Scenic Integrity Levels					Scenic Stability				
	Very High	High	Moderate	Low	Very Low	Very High	High	Moderate	Low	Very Low
1	x	x				x	x			
2	x	x	x			x	x	x	x	
3	x	x	x			x	x	x	x	
4		x	x	x		x	x	x	x	
5		x	x	x		x	x	x	x	
6		x	x	x		x	x	x	x	
7		x	x	x		x	x	x	x	

Scenic Class 1

Desired Condition: In Scenic Class 1, the scenery is highly valued, distinctive, and viewed frequently for a continuous duration. The view is highly intact with no utility corridors or other energy developments present and with minimal management disturbances. High to very high scenic integrity is present. All naturally occurring or historically valued dominant attributes of the scenic character are present. The ecological condition maintains a high to very high level of scenic stability.

Scale: Forestwide.

Scenic Classes 2 and 3

Desired Condition: In Scenic Classes 2 and 3 the scenery is valued, typical, and viewed frequently, but not continuously. The view is predominately intact, with alterations compatible with valued scenic attributes. Utility corridors and other energy developments are not present. Moderate to very high scenic integrity is maintained. Most dominant scenery attributes are present and are likely to be sustained. Ecological conditions may pose a threat to the valued scenic attributes. Low to very high scenic stability can be maintained.

Scale: Forestwide.

Scenic Classes 4, 5, 6, and 7

Desired Condition: In Scenic Classes 4, 5, 6, and 7, the scenery is not distinct in form, line, texture and color, viewing frequency is low, and durations are short. The scenery is usually visually intact and disturbances do not dominate the view. Disturbances are shaped and blended with the natural terrain. Visible utility corridors are linear features with feathered and undulating edges. Corridor floors are contoured to blend into natural contours and have groupings of low growing shrubs and boulders that break up the unnatural appearance of a cleared forest floor. Other energy developments are also blended into the natural surroundings. Low to high scenic integrity is maintained. The dominant scenery attributes of the valued landscape character are present and likely to be sustained. Low to very high scenic stability is maintained.

Scale: Forestwide.

2.2 Old Forest and Individual Old Trees

2.2.1 Old Forest

Background: The Blue Mountains were historically dominated by and well known for vast expanses of old forest single-story ponderosa pine. Frequent, low intensity wildfire is one of the dominant forces that historically created and maintained these stands. A wide spectrum of social values is associated with old forests. Various groups of people find old forests aesthetically pleasing, ecologically important, intrinsically and economically valuable, and necessary for future sustainability. Maintaining and restoring old forest addresses a wide spectrum of social values in addition to ecological values.

Existing Condition: Within the dry upland forest potential vegetation group, the amount of old forest single-story and open canopy (low stand density) is far less than levels that occurred prior to 1900. Within the moist and cold upland forest potential vegetation groups, the amount of old forest is closer to the desired condition, compared to the dry upland forest potential vegetation group.

Desired Condition: Old forest (multi-story and single story) is a forested structural stage that has an abundance of physiologically old trees (for the species and site conditions) that are dominant in the overstory and are usually larger in diameter. Old forest stands are maintained and restored across the landscape to provide a wide variety of ecological and social values. See the ecological desired conditions for specific ranges for the percent of each upland forest or woodland potential vegetation group in old forest structural stages. Like other forested structural stages, the management of old forest is also guided by other ecological desired conditions, such as stand density (see desired condition of “1.8 Stand Density”), plant species composition (see desired condition Plant Species Composition 1.7), fire regime condition classes (see desired condition of “1.4.1 Wildland Fire”), and landscape patterns (see desired condition of “1.12 Landscape Patterns”).

Scale: See the ecological desired conditions for forested structural stages.

2.2.2 Individual Old Trees

Desired Condition: Individual live old trees are maintained both within and outside of old forest stands to meet a wide variety of ecological and social values. For most tree species, certain physical tree characteristics can be used to infer old age. Old age for most tree species is generally considered to be greater than 150 years in age. However, old tree characteristics and old age may vary by species and site. A description of these characteristics and age should be further developed on a site-specific project basis.

Scale: Forestwide

2.3 Recreation

Background: National forests provide opportunities for a wide variety of outdoor recreation activities and settings. The Forest Service manages three types of recreational settings: developed recreation, dispersed recreation, and backcountry recreation. Different recreation activities can occur in any or all of these settings, depending on the nature of the activity. Most recreation users in the Blue Mountains participate in dispersed recreation individually or in small groups, with a small component of activities created for large, organized groups. This creates a diverse range of visitor needs and expectations that the Forest Service must respond to.

Recreation visitation to the Blue Mountains national forests includes two distinct demographics: local and regional. Regional recreation trends indicate an increasing average age of national forest visitors, an increasing proportion of multicultural and urban visitors, and decreasing use by younger generations. These regional visitors are looking for developed recreation facilities that are accessible, allow larger recreational vehicles, accommodate larger group sizes, have a high level of staff presence for security, and provide more urban amenities, such as dump stations, cell phone coverage, and potable water. The limitation of outdoor skills makes regional users more dependent on amenities at developed sites. These regional visitors may find the developed sites in the Blue Mountains national forests wanting as the level of development generally does not meet the urban user's desires.

In contrast, the local recreation visitor, who has a more rural perspective, is drawn to the less developed sites within the national forests and typically recreates in dispersed and backcountry settings. These visitors are predominately middle-aged (40 to 60 years old) Caucasian males. Eighty percent or more of the visitation in the Blue Mountains national forests comes from the counties that are associated with the national forests. (USDA Forest Service 2004) These visitors seek more remote and traditional recreation activities that require a high level of outdoor skill. In addition, they frequently use motor vehicles to access the national forests, which increases the demand for trailer parking at trailheads, pull-through campsites at campgrounds, and routes that accommodate off-highway vehicle (OHV) use.

This distinction and somewhat different needs of local and regional visitors creates a dilemma. The current mix of recreation settings is the result of years of limited appropriated national forest funding, creating budgets that have been considerably less than the total costs of daily operation and maintenance for developed, dispersed, and backcountry recreation settings. This limits the ability to be responsive to changing needs and has resulted in a high level of deferred maintenance. When facilities maintenance issues reach the point where health and safety concerns exist, a manager must develop partnerships or seek alternative funding beyond appropriated funding to keep the facilities safe and open. If managers are unsuccessful, facilities, such as campgrounds, trails, trailheads, roads, and dispersed sites, face closure. Deferred maintenance creates a constant void, making surplus funding unavailable to upgrade facilities with newer, more durable materials and designs or to develop them for universal accessibility.

The national forests also fulfill the Forest Service mission by permitting many commercial, volunteer, and organizational partners to operate recreational activities. These partners in turn contribute their unique talents, financial resources, and the technical capabilities to provide services that visitors may not otherwise have the ability to participate in. Some of the permitted activities include outfitter and guide services, ski areas and trams, lodges, and recreation events. Long term permits are used to manage structures and facilities while short term permits authorize events and services.

Existing Condition: Generally, recreation user satisfaction across the three national forests is good or very good regarding developed day use and overnight sites. Visitor satisfaction regarding dispersed recreation is of a wider range with more recreation visitors expressing an average, good, or very good level of satisfaction with the general forest. Wilderness visitors rated their satisfaction as good or very good, with notable dissatisfaction about interpretive displays and signs (USDA Forest Service 2004).

Across the three national forests 1,450,000 visits were identified by the 2003 National Visitor Use Monitoring (NVUM) survey. Data has been collected for the 2009 NVUM survey and will soon be available to determine trends in use. The top five activities categories for all three national

forests are relaxing, driving for pleasure, hiking/walking, wildlife viewing, and viewing natural features. These are activities that recreation visitors participate in, regardless of the primary purpose of the visit (USDA Forest Service 2004).

Hunting is the activity with the greatest percentage of primary engagement, with a range of 20 to 26 percent. Relaxing ranked second, with 8 to 20 percent of all visitors indicating it as the primary purpose of their visit. Fishing, downhill skiing, driving for pleasure, hiking/walking, viewing wildlife, and gathering forest products are indicated as primary visit purposes by 5 to 20 percent of visitors (USDA Forest Service 2004).

Desired Condition: Outdoor recreation and relaxation in natural environments enrich the lifestyle and mental and physical condition of national forest visitors. Recreation user satisfaction is maintained or improved. Valued recreation activities continue to be provided as traditional uses and generational activities. Providers include Forest Service, other agencies, and private operators. National forest visitors have opportunities to learn environmental ethics, develop outdoor recreation skills, respect other outdoors users, and take on appropriate challenges and risks. Recreation use creates minimal amounts of resource damage. Recreation facilities are properly maintained and meet all health, safety and accessibility requirements. Facility structures are of consistent design and character. Facilities complement the natural environment by using materials that fit with the surrounding landscape. Scenic integrity is commensurate with the inventoried scenic class.

Scale: Forestwide.

2.3.1 Developed Recreation

Existing Condition: The developed recreation setting is primarily found in areas accessible to motor vehicles and adjacent to primary roads and highways. This recreational experience is generally accommodated by facilities that provide comfort and convenience for the visitor in the outdoor environment. Developed recreation sites in this setting include developed campgrounds; ski areas; snow parks; interpretive trails; designed, developed, large, and popular trailheads; and motor boat launch sites. The facilities generally have more constructed amenities than elsewhere within the national forests, which enhance the visitor's experience. Examples of enhanced amenities include: interpretive sites and overlooks along scenic byways, downhill ski areas, and lodges and resorts that are managed by commercial operators. The environmental surroundings are usually scenic in nature, such as scenic ridgetops, river corridors, or lakes. The social setting generally involves frequent contact with other recreation users who expect to share the facilities. The primary activities available within these settings are camping, boating and fishing, snowmobiling, downhill skiing, biking, driving for pleasure, and viewing wildlife and scenery.

Developed recreation settings are typically the most well-known and heavily used sites within the national forests. This type of concentrated use requires ongoing maintenance to meet user expectations. For example, few of the facilities offered currently accommodate the size and length of modern recreation vehicles and most are not yet fully accessible for visitors with disabilities. Some crowding is experienced and expected and the cleanliness of the sites may be impacted for short periods during peak use. Resource impacts are also more frequent due to heavy use near lakes and streams that can cause impacts to stream banks, riparian vegetation, beaches, fish spawning areas, and overall water quality.

Approximately 4 percent of visitors camp in developed sites as their primary recreation activity, with 10 to 20 percent participating in camping at developed sites when they are participating in other activities.

Desired Condition: Developed facilities, such as campgrounds, restrooms, picnic areas, trailheads, snow parks, and boating and fishing sites, are well maintained, fully functional, provide for visitor safety, and are accessible to people with disabilities. Potable water and sanitary systems provided at the sites meet required health standards. Areas of highly concentrated use provide a full suite of amenities that provide for people of all ages, ethnicities, and abilities. The facilities are fully utilized with occupancy rates approaching 90 to 100 percent during peak use periods and occupancy rates of 25 to 40 percent during nonpeak summer and fall periods. Facilities provide some comfort for the user as well as site protection. New construction and reconstruction projects utilize a contemporary/rustic design based on the use of native or durable materials (i.e., naturally found materials or materials that appear natural). Facility structures are of consistent design and character. Facilities complement the natural environment by using materials that fit with the surrounding landscape. Impacts to natural resources from concentrated visitor use are minimal. Partnerships with private providers are encouraged and sustained at high-end developed areas, such as ski areas, trams, lodges, and concessionaire-operated campgrounds. Some special use permits, such as recreation residences, are retained and provide for recreation opportunities not available to the general public. Scenic integrity is commensurate with the inventoried scenic class.

Scale: Recreational setting.

2.3.2 Dispersed Recreation

Existing Condition: Dispersed recreation settings offer a broad array of opportunities to users who require few developed site amenities. National forest camps, rental cabins and lookouts, OHV trailheads, and wayside interpretive sites are examples of minimally developed facilities that are rustic in nature yet appeal to those wanting to be more self-sufficient. The sites lack plumbing, paved surfaces, or potable water sources found in the developed recreation setting. These areas are accessed via secondary or primitive roads and trails. Scenic and recreation river corridors also occur within this setting. Many activities occur here that people associate with a primitive or self-reliant dispersed activity. Peak periods can occur during fall hunting seasons when larger groups tend to congregate for hunting in traditional locations. During the rest of the year, campsites and activities are more dispersed, and social encounters tend to be infrequent. Visitors seek these settings to participate in a wide variety of activities, such as hiking, hunting, backpacking, stock packing, gathering forest products, biking, OHV riding, fishing, and viewing scenery and wildlife. Outfitter and guide services also provide commercial service for hunting, fishing, day rides, and river boating and rafting.

The site amenities and road access in these settings are infrequently maintained, which can result in resource damage due to heavy use of dispersed sites and OHV use off of roads and trails.

National forest roads and trails comprise between 50 and 70 percent of facilities used in the Blue Mountains national forests by dispersed recreation users. Notable differences between national forest facility uses includes Wallowa-Whitman National Forest visitors using scenic byways and picnic areas, Umatilla National Forest visitors using picnic areas and snowmobile areas and trails, and Malheur National Forest visitors frequenting developed fishing sites and scenic byways.

Desired Condition: Dispersed recreation allows national forest visitors opportunities to recreate independent of developed recreation facilities. Encounters with other visitors are common along travel routes; however, activities away from developed facilities provide for fewer encounters. Recreation activities and access are readily available in this setting. Areas and facilities accommodate a variety of motorized and nonmotorized uses and are primarily used by visitors to begin and end recreational experiences with a majority of the time spent away from developed facilities. The rustic amenities provided are well maintained and fully functional. Rustic facilities are provided for site protection and sanitary purposes and fit in with the surrounding area. Partnerships with private providers are encouraged and sustained for specialty services, such as big game outfitting and guiding, horseback riding, shuttle services, and bicycle touring. Some special use permits, such as for members only events and limited entry contests, are retained and provide for recreation opportunities not available to the general public. Scenic integrity is commensurate with the inventoried scenic class.

Scale: Recreational setting.

2.3.3 Backcountry Recreation

Existing Condition: Backcountry recreation includes use of roadless and roaded backcountry, designated wilderness areas, and wild rivers. While the NVUM does not separate backcountry and roadless visits from general forest visits, there is a distinction for designated wilderness area use, and there were 109,000 wilderness area site visits to the Blue Mountains national forests in 2003 (USDA Forest Service 2004).

Backcountry recreation occurs in the least developed setting and provides the greatest opportunity for solitude, risk, and challenge in environments of rugged, undeveloped landscapes. These landscapes are often deep, isolated canyons, heavily forested plateaus, subalpine high lake regions, and rocky ridgelines. There are minimal facilities, creating more self-reliance and challenge for visitors. Facilities, which are considered rustic or primitive in nature, such as information or direction signs, rustic toilets, and trails, may be found. Secondary roads provide access to small trailheads with only minimal directional signage. Trails designated for motor vehicle use and trails where motor vehicle use is prohibited are available in some areas but are not always open or maintained. Activities available in these areas, such as hunting and fishing, mountain biking, OHV riding, trail riding and stock packing, and river boating and rafting, often require self-reliance and higher levels of outdoor skills.

Although less frequent than at dispersed and developed recreation sites, there are instances of resource damage due to heavy use of popular dispersed campsites, cross-country OHV use, frequent use near beaches and high alpine lakes, and heavily traveled destination trails. The degree of solitude can be less than expected in popular areas, as well. Some conflicts between users groups, such as horseback riders, hikers, OHV users, backcountry skiers, and snowmobile users, occur on trails and in multiple use areas.

Desired Condition: Backcountry recreation allows national forest visitors opportunities to recreate independent of developed recreation sites with the exception of trails that facilitate access. Encounters with other people are uncommon or rare, and motorized uses are uncommon except near main portals. Recreation activities that require minimal amenities are available. The setting presents visitors with opportunities to be alone, and backcountry skills and abilities are required. The rustic amenities provided are well maintained and functional. Rustic and rudimentary facilities are provided primarily for site protection, information, and sanitary purposes. Materials used are rustic and minimal. Partnerships with private providers are

encouraged and sustained for specialty services, such as backcountry skiing, jet boat and raft trips, and big game outfitting and guiding services.

Scale: Recreational setting.

2.4 Hunting and Fishing

Background: Hunting and fishing are traditional recreational and subsistence uses within the Blue Mountains national forests. They are important aspects of local lifestyles and cultures and provide recreational and economic opportunities to surrounding communities, tribes, family groups, and individuals to socialize and harvest food for their own use. Hunting was identified by the 2003 NVUM as the number one primary activity in the Blue Mountains.

Existing Condition: Hunting and fishing remain important to tribes, national forest visitors and residents who live in the surrounding areas. The activities contribute to and diversify local economies. Activity levels have changed in recent years. Trends indicate that fewer people are hunting and more people are fishing.

Desired Condition: Opportunities for hunting and fishing are available in a variety of settings. The national forests provide a mix of opportunities that foster hunting and fishing, visitor activities, support Oregon and Washington Departments of Fish and Wildlife management objectives, and contribute to local, tribal, and regional economies and lifestyles.

Scale: Forestwide.

2.5 Rocky Mountain Elk

Background: Elk have been identified as a hunted species that is of local interest within the planning area. Both Oregon (ODFW 2003) and Washington (Fowler 2001) have developed management plans for elk located within the Blue Mountains. Elk are important both economically and socially within the planning area. Bolon (1994) reported that the value of elk hunting within the Blue Mountains of Oregon and Washington ranges between 17 and 20 million dollars per year.

In the past, management emphasis has been placed on sustaining cover, reducing vulnerability, and retaining elk on National Forest System lands. Part of this management emphasis stressed the retention of explicit canopy cover amounts in the dry forest areas. Management emphasis also identified particular road density goals within important elk habitat areas.

Research conducted at the Starkey Experimental Forest and Range and associated research sites is providing new insights into the importance of maintaining adequate nutritional resources for elk and into minimizing human disturbance effects through effective management of motor vehicle access and cover.

Existing Condition: Elk and the management of elk habitat continue to be important issues within the planning area. The number of elk hunters is declining slightly and the number of bulls and antlerless elk harvested appears to be declining more sharply (ODFW 2003).

Elk use of forage areas often depends on proximity to cover areas and the distance to roads and trails open to motor vehicles. Much of the open road density in the planning area outside of wilderness and roadless areas exceeds 2.4 miles per square mile. Many of the forage areas are associated with roads, and therefore the value of these areas to elk is minimized or totally lost. To

provide for elk security during hunting season, there is a greater need for motor vehicle road and trail network closures on landscapes dominated by flat, open terrain. The need for vegetative cover is reduced in areas of steep, convex topography. This topography can limit human access during hunting season. Historically, elk summered in the higher elevations and moved to the adjacent valleys during the winter. A large portion of the historic elk winter habitat has been converted to agricultural lands, residential use, or rural residences. As a result, elk no longer have access to their traditional winter ranges in the Blue Mountains. Damage to crops and pastures on private land by wintering elk has increased markedly during the past 40 years. This has led to the development of several elk winter feeding areas.

Desired Condition: In landscapes where elk use is promoted, as identified in coordination with state wildlife agencies, there is a mosaic of forage and cover areas, with minimal or no motor vehicle access through forage areas. There is an emphasis on maintaining existing cover areas in most winter range, which often compose smaller portions of the landscape, motor vehicle access and uses on winter range is minimized or eliminated during winter. Maintaining adequate forage areas close to cover and far from roads and trails open to motor vehicle uses is emphasized for most spring, summer, and fall range. For landscapes where hunting occurs, motor vehicle access is restricted so that elk can effectively use cover and topography as security. During hunting seasons, emphasis is placed on closing roads and trails to motor vehicles within landscapes that are flat and open; however, less emphasis is placed on closing roads and trails to motor vehicles within landscapes that are steep and have more cover, as identified in coordination with state wildlife agencies.

Maintaining a mosaic of elk forage and cover areas for a given season and landscape varies based on the biophysical potential of each landscape to sustain cover areas and based on the capability to maintain or enhance adequate forage areas that provide higher nutritional resources far from motor vehicle access. In areas where elk have the potential to damage adjacent private lands or there is a need to meet other goals of management across mixed land ownerships, the quantity of forage and cover areas may be reduced, such as in the wildland urban interface (WUI) where the goal may be to reduce the risk of wildfire, in these locations, forage and cover may not be optimal for elk.

Scale: A variety of spatial extents and boundaries (administrative, hydrologic, or ecological ranging from individual projects to areas as large as state wildlife areas or other administrative or jurisdictional boundaries. In general, monitoring change in habitat conditions for elk requires evaluation at smaller spatial extents, such as areas the size of subwatersheds (5,000 to 20,000 acres), but typically not as small as individual projects. Monitoring change in habitat condition or compliance in management direction for elk is appropriate when considering all management activities that occur or that are proposed over longer time periods of 5 to 15 years, as opposed to individual project activities over shorter time periods.

2.6 Cultural Resources

Background: Understanding the role of humans in past and present ecosystems provides a context for understanding contemporary landscapes and natural resource issues. Cultural resources have local, regional, and national scientific interest and significance and are elements of worldwide patterns and processes. The cultural resource program ensures that significant archaeological and historical resources are identified, protected, and preserved for the benefit and enjoyment of the public and future generations.

Cultural resource sites are categorized into three broad types: prehistoric site, historic site, or traditional cultural property. A prehistoric site is one that was established before the advent of a continuous written record, or approximately 1800 in this area. A historic site postdates this time. A traditional cultural property is associated with cultural practices or beliefs of a living community, is rooted in that community's history, and is important in maintaining the continuing cultural identity of the community.

Prehistoric and historic sites and traditional cultural properties that are eligible for listing with the National Register of Historic Places (NRHP) are considered historic properties under the National Historic Preservation Act (NHPA) and are managed and protected under that law. Cultural resource sites for which NRHP eligibility has not yet been determined are managed as historic properties until that determination is completed. The most significant and/or endangered historic properties are identified as priority heritage assets and are proactively monitored and managed.

Existing Condition: More than one-third of all cultural resource sites identified on National Forest System lands within Oregon and Washington are within the Blue Mountains national forests.

Prehistoric sites common to the Blue Mountains include quarries, tool manufacturing sites, hunting camps, fishing stations, plant gathering and processing sites, rock art sites, and villages. Historic sites in the area include homesteads, mines, railroads, cabins, corrals, lookouts, and Forest Service administrative sites. Traditional cultural properties include plant gathering sites and fishing stations.

Cultural resources are threatened by development, public use, looting and vandalism, as well as natural processes, such as erosion by wind and water, weathering, and wildfire. Educational and volunteer projects, such as the Forest Service's Passport in Time program, foster public participation in identifying and understanding cultural resources.

Desired Condition: Significant prehistoric and historic sites and traditional cultural properties are protected and are managed to standard as part of the Heritage Program. Traditional cultural properties are available for appropriate use. Knowledge of cultural resources is enhanced by scientific study, and public understanding of cultural history is enhanced through interpretation and education.

Scale: Forestwide.

2.7 Roads and Trails Access

Background: Access via roads and trails to and across the national forests has a long history in the Blue Mountains. Trails and migration routes date back to prehistoric times. American Indian migration routes are well documented through the stories of the Nez Perce, Umatilla, Warm Springs, and other tribes. Many of these ancient routes are the basis for roads, portions of roads, or trails that are in use today. Trails within the national forests also contributed to 1800s western migration as expeditions passed through this area. Notable ones include the original Oregon Trail, which can be traced along its intact template.

The history of the development of the road systems of the Blue Mountains national forests is primarily related to extractive resource management activities, such as mining and logging, which included constructing transportation infrastructure as it progressed. Many roads were located directly adjacent to streams and rivers because mining operations were often associated with

water. Lode mining necessitated the construction of roads and railroads to haul the ore. Logging operations often followed mining operations because timbers were needed to shore up tunnels or build cabins. Prior to the dependency on trucks, railroads provided the primary access into the area. Railroad logging can be traced as far back as 1901, and signs of this activity remain today, as evidenced by the numerous railroad grades throughout the area.

Additional roads were constructed to connect communities and for firefighting and administrative access to the national forests. Roads provided access for viewing scenery, reaching traditional campsites and hunting areas, grazing, and gathering forest products, such as berries and firewood.

During the last 25 years, Forest Service project analyses have determined that many roads could be closed and decommissioned to improve resource conditions. Some benefits of these closures include reducing disturbances to wildlife, improving water quality and reducing road maintenance costs. In the 1990s, advancements in OHV technology began to result in changes in use. Riders found that they could use OHVs to access rugged areas which had previously been accessible only by foot or horseback. This new type of use resulted in resource impacts, conflicts between user groups, and safety concerns.

Many trails within the national forests evolved from game trails, early American Indian hunting trails, and livestock herding trails, or those that were constructed by early recreation users. These trails were constructed to access remote lakes and scenic viewpoints. The majority of national forest trails are in dispersed and backcountry recreation areas.

Existing Condition: New, permanent road construction has markedly declined, and the current transportation system includes a backlog of maintenance needs. Maintenance of the transportation system is not sustainable given the current funding level of the Forest Service. The majority of the road maintenance budget is used for double-lane passenger vehicle roads, which are the most expensive and most highly traveled portions of the road system. It is important to understand that some roads require annual maintenance while other roads, due to the stability of the roadbed, are rarely maintained. When high-clearance and closed roads receive maintenance on an infrequent interval, deferred maintenance issues can become exacerbated. With the focus shifting to maintaining maintenance level 3 through 5 roads, the deferred maintenance backlog for the remainder of the road system continues to grow. In addition to annual appropriated funds, there is additional funding available for maintenance through the Forest Service capital investment program. This program is intended to address expensive road maintenance issues, such as bridge replacement or asphalt resurfacing. The limited amount of funds in the program are distributed by Forest Service regional offices via a competitive process. These large intermittent investments are required to keep roads serviceable, and annual allocations cannot meet all of the needs of the accruing deferred maintenance.

The average allocated road maintenance budget from 2008 to 2010 is approximately 1.3 million dollars for the three national forests. The annual shortfall is approximately 200,000 dollars, which adds to an already substantial deferred maintenance backlog. Given the priority of maintaining passenger vehicle access roads, much of the deferred maintenance will fall on maintenance level 1 and 2 roads, which represent 93 percent of the road network. Many of these roads are decades old with aging infrastructure that may require complete reconstruction in order to meet standards, especially considering that they have had inadequate maintenance due to the increasing maintenance intervals and growing backlog issues.

The continued maintenance of an extensive road system creates many challenges. Roads in disrepair create safety issues and conflicts with resource protection goals. Wildlife, soil and water

quality, and the spread of noxious weeds are negatively affected by the existence and use of the transportation system. Road closures have only been moderately successful, with many road closures breached. Off-road access varies across the three national forests. Although providing a unique recreational use for hunting, viewing wildlife and scenery, and gathering forest products, cross-country travel by motor vehicles has contributed to resource damage, spread of invasive species, habitat disturbance, and to changing wildlife and visitor use patterns.

Combining motor vehicle users and nonmotorized users at trailheads and along travel routes results in occasional conflicts. The majority of trails and trailheads have numerous maintenance needs due to the aging infrastructure. There are limited opportunities for motor vehicle use on system trails throughout the three national forests, however this type of use is increasing both locally and regionally.

Trails used primarily for foot, pack or riding stock, and mechanized transportation have occasional conflicts between users. Snow trails for snowmobiles, Nordic skiers, snowshoers, and dog sleds are designated on existing National Forest System Roads and contribute the winter recreational opportunities offered within the national forests. Many trails are not maintained each year due to budget constraints and some are in disrepair, creating safety and resource concerns.

Desired Condition: Road systems are safe and responsive to public needs and desires, are affordable and efficiently managed, have minimal effect on aquatic and terrestrial systems, and are in balance with available funding. Road density is at a level appropriate to avoid causing resource concerns. Administrative use supports Forest Service management objectives. Conflicts between user groups are minimized, and users take on appropriate challenges and risks.

Roads needed for the long term are identified and investments are made to minimize their effect on the ecosystem and to meet the mobility requirements anticipated in the future.

A system of roads, trails, and areas designated for nonmotorized and motor vehicle use is identified and is available for public use. Motor vehicle use that can cause ground disturbance occurs only on designated routes and in designated motor vehicle use areas as documented on the motor vehicle use map (MVUM). Trails designated for motor vehicle use provide a variety of recreational experiences, including various difficulty levels and trail lengths, access to scenic areas, and routes through assorted ecosystems. Loop trails, closed road systems, and trailhead developments meet the needs of increased recreation use. Snowmobile use is managed to provide varying challenges and distances while respecting ecological systems and other users.

Opportunities for trails where motor vehicle use is prohibited are emphasized in backcountry and wilderness areas. Trails where motor vehicle use is prohibited provide a range of difficulty for a variety of recreational experiences, including mechanized transportation (except in wilderness areas), foot travel, and pack or riding stock. Trails are located to provide experiences in different ecosystem types and scenic settings and do not contribute to resource damage.

Rights-of-way and easements provide adequate and legal access to National Forest System lands. Jurisdiction of county, state, and local access roads is appropriate to assure management objectives are met for both private and state lands.

The need for tribal access to traditional sites is acknowledged and supported.

Access and Open Motor Vehicle Route Density

The desired condition is to reduce road-related sedimentation by reducing road density and reducing hydrologic connectivity of the road system. The desired condition for open motor vehicle route density within watersheds in MA 3C is 1 mile per square mile or less. In addition, all cross-country over-the-snow vehicle travel is prohibited within MA3C, and over-the-snow vehicle travel permitted only on routes designated open to summer motor vehicle travel.

The desired condition for open motor vehicle route density within watersheds within MA 3B is to minimize the number of miles per square mile as determined by a roads analysis. The open motor vehicle route density in winter elk habitat is 1.5 miles square mile or less.

Scale: Forestwide.

2.8 Wildland-urban Interface

Background: The wildland-urban interface areas have been defined and mapped through a collaborative process that included developing community wildfire protection plans. In the absence of a community wildfire protection plan, the Healthy Forests Restorations Act of 2003 provides a default definition of wildland-urban interface as a 0.5 to 1.5 mile buffer surrounding a community-at-risk, depending on slope, fuels, location of logical fuel breaks, and other factors. Communities may also adjust the boundary to a more logical and defensible location or to include critical features, such as municipal watersheds, safety corridors, and infrastructure.

These areas are managed to meet a variety of ecological and human needs, with the main intent being to aid in the protection of communities from wildfire. These lands often display high levels of management activity and associated roads. The landscape area treated within the wildland-urban interface often exceeds 30 percent. The interval between treatments will often be more frequent than is typical for areas outside the wildland-urban interface. These areas are among the highest priority for vegetation treatments (including retreatment for maintenance) and wildfire suppression activities.

Existing Condition: Approximately 300,000 acres have been identified as wildland-urban interface within the locally developed community wildfire protection plans. Much of this has been identified as moderately to highly departed from the vegetation desired condition.

Desired Condition: Vegetation treatments within the wildland-urban interface areas are based on wildfire protection objectives, which may over-ride ecological desired conditions. Vegetative structure would result in fire intensity that allows for safe and effective suppression actions within wildland-urban interface areas. In general, vegetation density would be more open, with lighter fuel loadings, in comparison to areas outside wildland-urban interface. Fire risk within wildland-urban interface areas would be managed so as not to limit the ability to use fire for resource restoration in areas adjacent to wildland-urban interface areas.

Scale: Forestwide.

2.9 Tribal Rights and Interest

Background: The Forest Service establishes and maintains government-to-government relationships with the American Indian tribes that have sovereign governments. Government-to-government relationships are vital to protecting and managing ecological resources to honor, support, and respect cultural, spiritual, and community interests and to integrate these as fully as

possible into project design. Through treaties, tribes have reserved rights and privileges for their tribal members on off-reservation lands ceded to the U.S. Government. A significant portion of lands ceded (by virtue of the Treaties of 1855) by the Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of Warm Springs, Nez Perce Tribe, and Confederated Tribes and Bands of the Yakama Indian Nation of the Yakima Reservation that remained in the public domain were designated as part of the National Forest System by the Organic Administration Act of June 4, 1897. These treaties are known for their specific language recognizing that the tribes' reserved certain rights on the ceded lands. Therefore, the Forest Service has certain legal responsibilities to American Indian tribes. These legal responsibilities are clarified in statutes, executive orders, and case law enacted and interpreted for the protection and benefit of federally recognized American Indian tribes. In meeting these responsibilities, the Forest Service consults with tribes whenever proposed policies or management actions may affect their interests. The Burns Paiute Tribe, Shoshone-Bannock Tribes of the Duck Valley Reservation, Fort McDermitt Paiute and Shoshone Tribes, Fort Bidwell Indian Community of Paiute Indians, Klamath Tribes, and the Joseph Band of Nez Perce-Colville Confederated Tribes are federally recognized American Indian tribes that also have interests in the management direction and project planning of the Blue Mountains national forests.

While federal laws apply to all federally recognized American Indian tribes, each tribe is different and is recognized as a separate and unique government. Treaty rights and the historic relationships between tribes and the lands on and near their current reservations differ. Cultural differences between tribes can be significant. In some cases, several tribes may each have legitimate interests in the same lands because they each may have occupied or otherwise used those lands during different historic periods. These factors and others combine to make each Forest Service tribal consultation relationship unique.

Existing Condition: Government-to-government relationships and communications are a priority in national forest management across the Blue Mountains. National forest staffs understand the significance an interconnectedness of treaty resources within tribal cultures. Memoranda of Understanding for collaboration, consultation, and cooperation in the management of natural resources on National Forest System lands are in effect between the Forest Service and the Confederated Tribes of the Umatilla Indian Reservation, the Nez Perce Tribal Executive Committee, the Confederated Tribes of Warm Springs, and the Burns Paiute Tribe.

Desired Condition: National Forest System lands administered by the Malheur, Umatilla, and Wallowa-Whitman National Forests are available for tribal members to exercise their reserved rights. The ability to utilize trust resources contributes to the exercise of tribal rights, interests, and cultures in a manner that promotes sustainability of the ecosystem.

Scale: Forestwide.

2.10 Culturally Significant Foods

Background: Culturally significant foods, such as water, salmon, deer, cous (biscuitroot), and huckleberries, are critical to the perpetual cultural, economic, and sovereign benefit of American Indian cultures.

Existing Condition: Forest composition creates varying risks to and opportunities for supporting culturally significant foods.

Desired Condition: Culturally significant foods are available and accessible and are sustained by the ecological and cultural processes under which they historically developed.

Scale: Forestwide.

2.11 Community Resilience

Background: Resiliency is the ability of communities and cultures to adapt to changing ecological, social, and economic conditions. The availability of national forest goods and services has varying impacts on communities within the project area. Remote communities with less diversified economies tend to be less resilient than communities that are more urban (Horne and Haynes 1999, Quigley and Arbelbide 1997).

Resiliency refers to the ability of communities and cultures to adapt to changing ecological, social, and economic conditions. The resiliency of local communities and tribes in the Blue Mountains is important to the national forests because managers benefit from community infrastructure, which includes local knowledge, skilled workers, and social networks/relationships that provide the basis for accomplishing work within the national forests. Communities also provide and maintain roads and facilities that are needed for access to the national forests and services for the public, such as food, beverages, and lodging.

The national forests are important to the resiliency of local communities and tribes because residents benefit from jobs and income produced from management activities, such as timber harvesting, livestock grazing, and mining. The national forests also provide the context and source for clean water, clean air, wildlife, recreation opportunities, and landscape settings that contribute to residents' quality of life and the character of local communities and tribes.

Past shifts in land management practices and priorities have had varying effects on local communities and tribes. In general, isolated communities with less diversified economies have been the least resilient and have had the greatest difficulty retaining the local people whose knowledge and resources can contribute to national forest management and restoration.

Existing Condition: Some communities and tribes in the project area have suffered from declining economies, which have contributed to changes and challenges. Unemployment rates have risen along with the need for social services. Some of the communities within the planning area are experiencing population declines, particularly among younger people of working age. For many communities, the lack of people in this demographic has meant a smaller pool of volunteers for the fire department, the school board, and for service organizations. For some communities, the demographic shift has influenced declining school enrollment and the ability to maintain medical services.

Changes in national forest management have also contributed to declining local economies. Similarly, community changes threaten to hamper the ability of the Forest Service to implement projects that contribute to sustainability. In most counties, sawmills have closed either temporarily or permanently. Some skilled workers have remained in the communities, anticipating that market changes or other opportunities to earn a living will emerge.

Additional declines in social and economic conditions in the communities and tribes will continue to negatively affect national forest management. Although some restoration work can be accomplished by nonlocal contract workers, managing the national forests will require a

functional, local infrastructure, with attributes including local knowledge, skilled workers, people who have attachments to the local landscape, and social networks/relationships.

Many of the factors that contribute to community resiliency are beyond the control of communities, counties, states, and the Federal government, including the Forest Service. This limits the ability to improve community resiliency through the management of the national forests.

Desired Condition: The management of the Blue Mountains national forests contributes to outputs and opportunities that support community infrastructure. The national forests foster healthy and resilient communities and American Indian tribes by providing sustainable ecological services or products. In turn, communities use their infrastructure (which includes manufacturing facilities, local knowledge, skilled workers, and social networks/relationships) to support natural resource management and restoration activities. Local communities and tribes that rely on the resources of the Blue Mountains national forests are resilient and adapt well to changing conditions. Climate change scenarios may foreclose some opportunities while providing others. Being able to adapt to multiple potential scenarios is important to maintaining resilient communities. They have the capacity to collectively create and pursue ecological and economic opportunities that foster sustainability.

Scale: Forestwide.

2.12 Wild Horses

Background: Wild horse herds are often associated with Bureau of Land Management administered land, however they are often found on National Forest System lands as well. Wild horses are typically descendants of horses brought to North America by Spanish explorers. Wild horses are often thought of as a symbol of pioneers and the west. In 1971, Congress enacted the Wild Free-Roaming Horses and Burros Act, which was subsequently amended in 1978 to state that horses needed to be managed "in a manner that is designed to achieve and maintain a thriving natural ecological balance on the public lands."

Existing Condition: The Murderers Creek Wild Horse Territory/Herd Management Area was established in 1972 and encompasses both National Forest System land and Bureau of Land Management administered land. A management plan was developed for the territory and approved in 2007. More than 50 percent of the horses within the territory are considered timber horses, as they live in the heavily timbered areas of ponderosa pine and mixed conifer.

Desired Condition: A viable, free-roaming wild horse herd (consistent with the desire of the herd management plan in effect at the time of project level planning) that is genetically diverse and is in ecological balance with other approved multiple uses is present within the Murderers Creek Wild Horse Territory. In concert, this leads toward stable or improving habitat conditions.

Scale: The Murderers Creek Wild Horse Territory/Herd Management Area.

Goal 3: Promote Economic Well-being

Economic well-being is a condition that enables people to work, provide income for their families, and support the economies of local communities, American Indian tribes, the region, and the Nation. The contributions of the national forests to economic well-being are described for capital and wealth and for the economic production of goods and services.

There are many other values, benefits, and costs not addressed in the following discussion of economic well-being. They include the multitude of benefits and costs not traded in the marketplace and values that are difficult to express in monetary terms or other quantitative measures. These values, benefits, and costs are an important part of social and economic sustainability. They are addressed in the section "Goal 3: Promote Social Well-being."

Local economic conditions are interrelated with changes in the economies of Oregon, Idaho, and Washington, as well as with changes in regional, national, and global economies. Recognizing the interdependency between the Forest Service's need for forest management work and the degree to which local industries, infrastructure, employment (including youth), skilled workforce, and other factors provide for this need is important to sustaining and restoring the ecological integrity of the national forests and social and economic conditions of the communities.

Historically, the national forests of the Blue Mountains made significant contributions to area communities, both socially and economically. These national forests still contribute in vital ways to community resilience by providing jobs and quality of life. However, they are not the sole providers of economic stability for communities in the area. Recognizing mutual benefits of the relationships between local communities and the national forests is critical to understanding the contributions to the maintenance and enhancement of other desired conditions, such as healthy forests, clean water and air, scenery, cultural and historic resources, skilled workforce, and manufacturing infrastructure in the context of other local, regional, and national conditions.

3.1 Facilities and Infrastructure

Background: The Blue Mountains national forests maintain administrative and recreational facilities for a variety of purposes. Examples of administrative facilities include offices, storage, service and utility buildings and housing. Due to the recreation emphasis of the national forests, there are considerable numbers of recreational and historic facilities. Many of these are in remote locations. Some are only accessible by horseback, foot, or boat. This section does not address recreation facilities. Refer to section "2.3 Recreation" for more information. The three national forests use facility master plans to align changing budgets, administrative, and workforce needs.

Existing Condition: The existing square footage of owned and leased administrative facilities within the Blue Mountains national forests exceeds the Forest Service's administrative needs. There are approximately 727,021 square feet of facilities. Of this, 29 percent is office space, 45 percent is storage, and 25 percent is housing. The cost of maintaining these facilities exceeds current budget allocations. The long-term goals identified in the national forest master plans are to reduce the amount of facilities space to affordable levels while meeting administrative needs. Office space is being reduced by 6 percent, storage by 13 percent, and housing by 22 percent. The total square footage will be approximately 624,839 square feet after these reductions are accomplished. The current master plans show that the facilities that will be retained are properly located. There are plans to either remove some of the remote facilities or leave them in place to deteriorate naturally, with no further planned maintenance.

Several buildings and sites are eligible for or listed on the National Register of Historic Places. Section 106 of the National Historic Preservation Act of 1966 requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. An undertaking such as removal of an eligible or potentially eligible historic building would require compliance with section 106.

Desired Condition: Administrative facilities are safe, efficient, cost-effective, and are maintained at a function and use level that meets management needs. Facilities meet all applicable health and safety standards. Impacts to natural resources are minimal. Administrative facilities complement and harmonize with natural settings. The form of structures is derived by the function and from the landscape setting. For example, structures in mountainous, timbered landscapes have steep rooflines and broad eaves and use durable indigenous materials, such as stone and heavy timbers, with the appearance derived from the local environment. Structures, signage, and other built environment elements reflect the style and character inherent in the local environment (USDA Forest Service 2001).

Scale: Forestwide.

3.2 Land Ownership

Background: The Forest Service lands program emphasizes land acquisitions that protect and enhance identified management resource needs. The program also pursues opportunities to consolidate land ownership, decrease management conflicts, increase management efficiencies, secure and mark property boundaries, and secure rights-of-way to meet administrative and public needs.

In addition, there is national emphasis on open space preservation, protecting the most ecologically and socially important lands, conserving working lands as sustainable forests and herblands, and working with communities and private land owners to preserve and maintain existing open space (USDA Forest Service 2007).

Existing Condition: Since 1990, the Blue Mountains national forests have acquired 42,320 acres of privately held land within the national forest boundaries through land exchanges and purchases. The Forest Service has disposed of 19,914 acres through land exchanges, small tract sales, administrative site sales, and mineral patents. Within the boundaries of the Blue Mountains national forests, 94 percent of the land is federally administered. Of the remainder, 5 percent is private land and 1 percent is state or county land.

Desired Condition: Property boundaries are marked to standard. Encroachments, title claims, and trespasses are identified and resolved. Property boundaries are maintained to reduce the likelihood of future encroachments, title claims, and trespass. Road and trail easements are prioritized and obtained to continue access across private lands and reduce rerouting costs.

Landownership adjustment by purchase, exchange, or other authority simplifies and improves management of the Blue Mountains national forests. Priorities for land acquisition include congressionally designated areas and lands that support known populations of threatened, endangered, proposed, or sensitive species.

Scale: Forestwide.

3.3 Goods and Services

Background: Historically, the Blue Mountains national forests made contributions to local economies and they continue to do so today. Many people depend on the national forests directly or indirectly for a wide range of goods and services. These include wood for local sawmills and fuel, forage for livestock, water for drinking and irrigating downstream crops, recreational opportunities, minerals, and energy. Non-commercial uses include gathering Christmas trees,

firewood, plants, herbs, poles, traditional cultural plants, and mushrooms. Goods and services also include clean water and natural water storage.

There are mutual benefits that flow between cultures, communities, and the national forests that are critical to the maintenance and enhancement of desired conditions. The interdependency between the need for forest management work and the local needs of industries, workforce, and other factors are important to sustaining and restoring the ecological integrity of the national forests and the social and economic conditions of the cultures and communities.

Providing a level of certainty and predictability in the flow of goods and services from the national forests is important to maintaining an economically viable workforce and supporting industrial capacity to facilitate national forest management needs and contributions to community resiliency. These contributions benefit local, tribal, regional, and national economies.

The existing and desired conditions for 3.3 Goods and Services are described in 3.3.1 Forest Products, 3.3.2 Livestock Grazing, 3.3.3 Special Uses, 3.3.4 Mineral and Geological Resources, and 3.3.5 Water Use.

3.3.1 Forest Products

Background: The Blue Mountains national forests have a long history of providing timber and other forest products to address local community and national needs. During the post-World War II era, communities throughout the Blue Mountains plan revision assessment area had a strong economic component related to a flourishing wood products industry. The area includes Baker, Grant, Harney, Malheur, Morrow, Umatilla, Union, Wallowa, and Wheeler counties in Oregon, and Asotin, Columbia, Garfield, and Walla Walla counties in Washington. Recently, environmental protection required by stronger environmental laws has resulted in a focus on sustainability across a broader range of resources. These protections and changing mill technology resulted in significant declines in timber harvest and timber industry employment on both private and National Forest System lands within the Blue Mountains.

The amount of timber volume harvested from the Blue Mountains national forests has declined dramatically, from highs of almost 600 million board feet annually during the early 1990s to less than 50 million board feet per year now. Fifty million board feet is the average annual harvest, excluding firewood, between 2004 and 2007. Harvest on all other ownerships has also declined by about 30 percent during the same period, resulting in an overall decline of about 70 percent in local log supply.

Existing Condition: The actual timber harvest amount is about 50 million board feet annually. Market conditions have a considerable effect on the amount of timber sold.

During the past 20 years, wood products processing has also changed. There was a decrease in sawmill production of almost 60 percent. Manufactured board processing decreased by approximately 30 percent, and there was a reduction in plywood and veneer processing of about 10 percent, while pulp processing remained about the same.

The decreasing production capacity, labor saving technological changes, and decreases in logging have resulted in declines in associated employment. In 1990 wood products employment in sawmills; veneer and plywood production; reconstituted wood, pulp, and paper production; and logging totaled about 6,300 jobs. Since then, employment has declined, and wood products related employment totaled about 3,500 jobs in 2006. The greatest overall employment decline was in the sawmill sector, where about 2,300 jobs were lost.

Although some economic diversification has taken place, especially in the retail and health and business services sectors, economic growth in the Blue Mountains region has been slower than that of Oregon and Washington and the Nation overall. Wood products manufacturing remains an important part of local economies in Grant, Umatilla, and Union counties in Oregon and Asotin County in Washington. There is expanding use and interest in biomass for fuels.

Timber harvest continues to be an important tool for managing vegetation to achieve desired conditions, including those for wildlife and wildland fire management. Without the local timber products industry, the capability of the Forest Service to affordably manage vegetation would be reduced.

The Blue Mountains national forests have also contributed nontimber forest products, such as firewood, mushrooms, and berries to residents and tribes. In 2007, the national forests sold about 140,000 dollars of firewood collection permits and about 30,000 dollars of mushroom collection permits. These uses provide important connections between people and the national forests.

Desired Condition: Land classified as suitable for timber production has a regularly scheduled timber harvest program that provides social and economic benefits while contributing to ecosystem health and sustainability. Land classified as unsuitable for timber production, but where timber harvesting can occur for other multiple-use purposes, has an irregular timber harvest program that contributes to ecosystem health and sustainability while providing benefits to people.

A predictable supply of timber outputs, known as the allowable sale quantity, contributes to a local forest products industry.

Small diameter biomass provides a variety of forest products, such as hog fuel, fuel chips, pulp, small diameter roundwood, and firewood.

Non-timber forest products, such as berries and mushrooms, continue to be available for gathering in sustainable amounts for general public, commercial, and tribal use.

Scale: Forestwide.

3.3.2 Livestock Grazing

Background: Livestock grazing is a historical use of the national forests that still resonates today in the western culture of the area. Grazing has been a part of the landscape since the 1860s when the first miners and homesteaders entered the area. Although livestock grazing on National Forest System lands has decreased since the early 1900s, the ranching industry remains an important part of the local community culture and economy. Local ranchers graze cattle on the herblands and forested ranges of the national forests during late spring, summer, and early fall. Public land grazing is often an integral component of overall ranch operations.

The Blue Mountains national forests, like many areas in the western United States, have a reputation of livestock overuse that started in the late 1800s and continued into the mid-1930s. Beginning in the late 1970s, improved grazing systems and pasture designs were implemented to facilitate resource recovery. Implementation of the land and resource management plans in the early 1990s reduced the amount of allowable use by livestock grazing to accelerate the rate of recovery. In the mid to late 1990s, other mitigations associated with the Endangered Species Act and the PACFISH (USDA and USDI 1995) and INFISH (USDA Forest Service 1995b) amendments to the 1990 Forest Plans were implemented to further protect riparian areas and

associated aquatic species. Modified grazing strategies and implementation of utilization standards have resulted in reduced use levels in riparian areas resulting in many of the riparian systems showing definite signs of recovery and riparian vegetation improvement. Woody shrubs are more prevalent. Investments and maintenance of structural and nonstructural range improvements are contributed to by both the permittee and the Forest Service.

Permitted numbers of livestock and/or seasons of use have declined slightly in response to the utilization standards and resolution of resource conflicts.

The annual amount of grazing that occurs within the national forests varies due to resource conditions and livestock markets. The Forest Service adjusts the amount and timing of use based on forage utilization standards. Permittees adjust how much of the authorized use they actually use based on market conditions.

Background: The average number of cattle using the national forests during the 2005,2006, and 2007 grazing seasons was about 54,000 animals, varying from 47,000 to 60,000. This amount of use also averages about 250,000 head months. The average sheep use during the same period was about 12,000 animals, varying from 9,000 to 15,000. Grazing use by horses and burros was less than 100 animals. There typically are more than 200 permittees grazing livestock within the national forests. There currently are 224 active allotments with 3.4 million acres associated with those active allotments.

Desired Condition: Grazing allotments contribute to a predictable supply of livestock forage that contributes to local ranching operation sustainability and local community growth while maintaining or achieving ecological desired conditions.

Scale: Forestwide.

3.3.3 Special Uses

Background: The Forest Service provides and manages a wide range of recreation and nonrecreation special use permits within the Blue Mountains that authorize the occupancy and use of National Forest System lands. The authorizations provide primary use to the permit holders. Some of the key objectives of the special uses program include managing special uses in a manner that protects natural resource values and public health and safety consistent with the forest plans, and facilitating the delivery of recreational opportunities for services the Forest Service cannot provide.

Existing Condition: The Forest Service manages more than 900 special use permits annually within the Blue Mountains national forests. This includes permits that are long term in nature, such as a reservoir or a recreation residence. These types of special use permits may exist for decades. Permits also include short term uses, such as weekend lodging in a guard station, movie or television filming, and recreation events.

Slightly more than one-half of all special use permits are recreation related with recreation residences being the most common, followed by outfitting and guiding permits. The most common nonrecreation special use permits authorize utility corridors for powerlines and water transmission, electronic towers, and road easements.

Desired Condition: Special uses are authorized for uses that the national forests have a unique niche to provide. These authorizations are managed to protect natural resources values consistent with the ecological, social, and economic desired conditions.

Scale: Forestwide.

3.3.4 Mineral and Geological Resources

Background: Geological resources in the Blue Mountains include leasable energy minerals, such as oil, natural gas, coal, and geothermal resources; saleable minerals, such as sand, gravel, and other rocks used in the construction and landscaping industry; and locatable minerals, such as gold, silver, and other precious and base metals.

Existing Condition: Oil and gas resources are known or suspected to occur in a deep sedimentary basin that underlies parts of the Wallowa-Whitman and Malheur National Forests and all of the Umatilla National Forest. The extent of these resources is unknown due to their depth and the difficulty of exploration through the overlying Columbia River basalts.

To date, there has been very little coal development on National Forest System lands in the Blue Mountains. Coal deposits are known to occur in the Troy and Flora areas and west of Ukiah in the Arbuckle coal field. These coal deposits have been explored in the past with little indication that the deposits are of economic value. There is no active, proposed, or anticipated coal mining or coal bed methane operation on National Forest System lands.

Geothermal resources exist throughout the Blue Mountains and are revealed in numerous hot springs and warm water wells. This indicates the presence of a widespread, shallow geothermal resource. This resource is not limited to surface manifestations, such as hot springs, but rather appears to occur throughout the area; consequently, estimating the development potential is difficult.

Saleable common variety mineral resources exist throughout the Blue Mountains. The over-abundance of volcanic basalt and andesite formations make this resource readily available.

Locatable mineral resources occur on all three national forests but are primarily concentrated in a broad linear path that begins southwest of John Day, Oregon and extends northeast through Sumpter, Granite, Unity, and Baker City and across to Durkee, Halfway, and the Eagle Cap Mountains. They are also exposed in the bottom of Hells Canyon. These deposits are closely associated with Jurassic age intrusive rocks. Chrome, gold, silver, copper, zinc, and other metals have been produced from placer and lode mines along this path.

Desired Condition: Exploration, development, and production of mineral and energy resources contribute to the social and economic needs of the Nation as well as local communities, and are conducted so as to minimize adverse environmental effects on national forest surface resources.

3.3.5 Water Use

Background: National forests in the Blue Mountains contain the headwaters of the John Day, Umatilla, Walla Walla, Tucannon, Grande Ronde, Imnaha, Powder, Burnt, Malheur, and Silvies rivers and other streams. The combined area of these river basins totals roughly 19.7 million acres, of which 5.2 million acres are National Forest System lands. The combined flow of all rivers originating on National Forest System lands is an estimated 7,400,000 acre-feet per year, and approximately 5,150,000 acre-feet flows directly from within the national forests (Brown et al. 2008 and Gecy 2009a). Seventy percent of total streamflow originates on less than 30 percent of the watershed area that comprises the national forests. Within the national forests, water provides habitat for aquatic species, sustains riparian vegetation, which provides habitat for numerous terrestrial wildlife species, and is used for recreation, stock watering, and other uses.

Downstream of the national forests, streams and rivers provide water for the same uses, in addition to domestic, industrial, commercial, and agricultural uses.

Existing Condition: Data for the 1995 water year (Solley et al. 1998) indicate that 97 percent (2.4 million acre-feet; 33 percent of total streamflow) of total water withdrawals from rivers emanating from the Blue Mountains is used for irrigation and about 1 percent is used for human consumption. Seventeen percent of total water withdrawals are from groundwater and the remaining 83 percent is water diverted directly from surface streams. Irrigation water is used primarily from March through October, depending on the basin and state water right laws. In all basins, the availability of additional water for irrigation use is limited and in some basins available water is already fully appropriated.

Of more than 8,200 water rights held in the name of the United States on National Forest System lands, 1,360 have groundwater sources (seeps, springs, etc.), 2,245 are instream rights held for the benefit of aquatic species, including anadromous fish, and 3,200 are used primarily for livestock watering.

During the past 30 to 40 years, there has been a trend toward decreased winter precipitation and lower spring stream flows in several river basins in response to gradually warming temperatures in the Pacific Northwest (Gecy 2009b). Continuation of this trend, combined with the lack of water storage facilities, is likely to result in water shortages during years of lower than average winter precipitation.

Desired Condition: Water is available in sufficient quantity downstream to meet human needs as well as the needs of aquatic species considering the range of possible climate change scenarios.

Water quality and quantity of groundwater resources, including seeps, springs, fens, and other groundwater-dependent ecosystems, is sufficient to provide for the extent and diversity of species normally associated with these habitats.

Scale: Watershed to subbasin.

Part 2 – Strategy

Introduction

Part Two—Strategy describes the strategy the Forest Service intends to use to achieve or maintain the forestwide goals and desired conditions described in part one and the management area desired conditions described in this part of the forest plan. This part also includes discussion of special areas, management areas, general suitability of areas, and the objectives, which includes the management focus and the associated management approaches.

Special Areas

Special areas within the national forests are managed to protect or enhance unique or special characteristics. They have individual management areas and are identified or designated because of their unique or special characteristics. These areas provide for conservation of representative, unique, or rare ecosystems or ecological components, as well as culturally significant components. Some of these areas help provide an important role under an adaptive management philosophy by providing natural reference areas that are intensively managed for a particular objective. Management emphasis is primarily focused on protecting or improving, and where appropriate, developing and interpreting the area's special characteristics for public education and enjoyment.

Special areas are formally designated either by congressional statute or by administrative action and are divided into two types of designations.

Congressionally Designated Areas

Congressionally designated areas have been established through a formal act of Congress, such as a wilderness area or the Hells Canyon National Recreational Area (HCNRA).

Through legislation, Congress has designated several areas that are unique for their special characteristics and the opportunities offered. Congressional designation provides specific management actions and direction in specific areas. In addition to congressionally designated wilderness areas and wild and scenic rivers, this includes national recreation areas.

Administratively Designated Areas

These areas have been established through special administrative procedures, usually at the national level unless the authority for such establishment has been locally delegated.

While administratively designated areas may be proposed in the forest plan, they are established through a separate process subsequent to the planning process. Management direction may include specific direction to preserve the unique characteristics of the area. The following types of administratively designated areas occur on or across the Blue Mountains: scenic areas; historical, geological, and botanical areas; research natural areas; municipal watersheds; scenic byways; and nationally designated trails.

Management Areas

Management areas broadly describe areas where general management intent is similar. The purpose of management areas is to provide consistent guidance for similar portions of national forest landscape when implementing or continuing management activities. The management areas

generally range along a continuum from little development by humans in MA 1A to extensive human development in MA 5.

All management areas are displayed in table 11 and described in full following the table. Overlap occurs between most management areas but is not accounted for in table 11. The overlapping management areas result in the total acreage of all management areas being greater than the official national forest acreages. For example, several research natural areas (MA 2B) and wild and scenic rivers (MA 2A) overlap into congressionally designated wilderness areas (MA 1A).

Wilderness area acres have been recalculated using the most current GIS technology. No additions or subtractions to any wilderness areas have been made since the 1990 forest plans were signed. Acres of private land inclusions are not included in any wilderness area acre calculations.

The acreage for the portion of the Ochoco National Forest adjacent to and administered by the Malheur National Forest is included in this table. Scenic byways and national designated trails within the HCNRA are not included in this table. The figures in the table are rounded to the nearest 100 (acres) and to the nearest whole mile.

In addition, this table does not include acreage for the HCNRA. The HCNRA CMP, which was updated and approved in 2003, will be carried forward in its entirety. The HCNRA CMP is the portion of the Wallowa-Whitman National Forest Land and Resource Management Plan that guides management of the HCNRA.

Table 11. Management area designation, name, and acreage for each national forest (2F and 2G show miles)

Management Area Designation and Name	Malheur	Umatilla	Wallowa-Whitman
1A – Congressionally Designated Wilderness Areas	82,600	304,200	372,900
1B – Recommended Wilderness Areas	30,400	40,100	20,300
1C – Wilderness Study Area	0	0	2,400
2A – Wild and Scenic River (Includes Designated, Eligible, and Suitable Rivers)	12,100	44,600	52,900
2B – Research Natural Areas	11,100	11,000	8,000
2C – Botanical Areas	100	2,400	0
2D – Geological Areas	200	400	0
2E – Historical Areas	34,000	1,200	24,700
2F – Scenic Byways and All-American Roads	13 miles	51 miles	85 miles
2G – Nationally Designated Trails	9 miles	30 miles	25 miles
2H – Scenic Areas	14,400	31,100	0
2I – Starkey Experimental Forest and Range	0	0	30,500
2J – Municipal Watersheds	500	20,200	24,500
3A – Backcountry (nonmotorized use)	53,600	70,100	104,500
3B – Backcountry (motorized use)	119,100	160,600	145,500
3C – Wildlife Corridor	0	21,600	6,500
4A – General Forest	1,245,600	625,200	844,300
4B – Riparian Management Areas (300/150/100 foot buffer)	192,900	237,500	362,500
5 – Developed Sites and Administrative Areas	2,200	3,700	7,700

MA 1A Congressionally Designated Wilderness Areas

Description: As defined by the 1964 Wilderness Act, a wilderness area is undeveloped Federal land retaining its primitive character without permanent improvements or human habitation and is managed to preserve its natural conditions.

There are six designated wilderness areas within the Blue Mountains national forests that were established through a number of legislative acts, including the Oregon Wilderness Act (1984) and the Washington Wilderness Act (1984). These areas are displayed in table 12.

Table 12. Designated wilderness areas for each national forest

Wilderness Area Name	Acres*
Malheur National Forest Designated Wilderness Areas	
Strawberry Mountain	69,509
Monument Rock	13,047
Total	**82,556**
Umatilla National Forest Designated Wilderness Areas	
Wenaha-Tucannon	176,753
North Fork John Day	107,158
North Fork Umatilla	20,255
Total	**304,166**
Wallowa-Whitman National Forest Designated Wilderness Areas**	
Eagle Cap	351,859
Monument Rock	7,188
North Fork John Day	13,897
Total	**372,944**
Total All	**759,666**

* The management area acres displayed are taken from the 1990 forest plans and have not been recalculated using the most current GIS technology.

** Wilderness area acres within the HCNRA are not included in this table.

Desired Condition: Designated wilderness areas exhibit primitive qualities. Opportunities for research, exploration, solitude, risk, challenge, and primitive recreation are widespread. On the trail system, opportunities for solitude are moderate to high, with few human encounters expected. Opportunities for solitude are high when traveling cross-country with almost no human encounters expected. Campsites may be visible at popular destinations along water features and at major trail junctions. These sites accommodate moderate use. Directional and regulatory signs are primarily found at trailheads outside of this management area but some signs may be present within these areas along trails and junctions. Buildings are rare within this management area; however, the preservation of historical features or retention of facilities for administrative use may occur. Ecosystems are influenced by natural processes with little or no human intervention. Geological and ecological processes, such as wildfire and insects and disease, operate relatively free from the influence of humans. Any influences upon these processes by humans is intended to protect human life; protect adjacent private property or private in-holdings; and reduce impacts to Federal facilities, historic or cultural structures, and threatened and endangered plant or animal species or species included in the regional forester's sensitive species list. Predominately diverse, native vegetation results from natural succession and disturbance processes, while nonnative vegetation is rare. The recreation opportunity spectrum is primitive.

MA 1B Preliminary Administratively Recommended Wilderness Areas

Description: The areas in MA 1B have been determined to meet the criteria established to qualify for designation as wilderness areas. These areas are recommended for designation and inclusion in the National Wilderness Preservation System. Until a decision is made by Congress, these areas will be managed to protect the wilderness characteristics that meet the criteria for designation of these lands as designated wilderness areas.

Desired Condition: Recommended wilderness areas exhibit primitive qualities. Opportunities for research, exploration, solitude, risk, challenge, and primitive recreation are widespread. On the trail system, opportunities for solitude are moderate to high, with few human encounters expected. Opportunities for solitude are high when traveling cross-country with almost no human encounters expected. Ecosystems are influenced by natural processes with little or no human intervention. Geological and ecological processes, such as wildfire and insects and disease disturbances, operate relatively free from the influence of humans. Predominately diverse, native vegetation results from natural succession and disturbance processes, while nonnative vegetation is rare. Uses are conducive to maintaining the wilderness characteristics of the areas. The recreation opportunity spectrum is primitive.

MA 1C Wilderness Study Area

Description: The Homestead Wilderness Study Area, including the neighboring Federal lands managed by the Bureau of Land Management, contains about 14,000 acres of public land.

Inventoried roadless areas were reviewed, and the portion of this roadless area managed by the Wallowa-Whitman National Forest increased from about 5,700 acres to about 9,000 acres. Most of the area is within the HCNRA, and the remainder of the roadless area is within the Whitman Ranger District. The 1991 Bureau of Land Management wilderness study process included the national forest acres and did not propose to recommend this roadless area for wilderness designation. Congress has not yet accepted the study, so these acres remain in the wilderness study area category. Wilderness values and resources will be protected until Congress either designates the area as part of the National Wilderness Preservation System or releases the area from consideration.

Desired Condition: The Homestead Wilderness Study Area provides opportunities for primitive recreation where natural processes dominate the landscape. The recreation opportunity spectrum is primitive.

MA 2A Wild and Scenic Rivers (Includes Designated, Eligible, and Suitable Rivers)

Description: This management area applies to river segments that have been designated as part of the Wild and Scenic Rivers System under the authority of the Wild and Scenic Rivers Act, as amended (1968) and the Oregon Omnibus River Act (1988) (see table 13). Depending on the alternative, it also applies to rivers identified as eligible or suitable for designation (table 14 and table 15). The act requires that a detailed study report be prepared for all rivers mandated for study under section 5(a) of the Wild and Scenic Rivers Act, as amended, and for all other rivers identified by the Forest Service as eligible for inclusion in the National Wild and Scenic Rivers System (sec. 5(d)(1) of the act). Section 5(d)(1) study rivers found eligible are to be protected pending a suitability determination. Land management agencies must protect section 5(d)(1) study rivers found suitable for inclusion in the National Wild and Scenic Rivers System for their free-flowing condition, water quality, and outstandingly remarkable values. The existence of low dams, diversion works, or other minor structures at the time any river is proposed for inclusion in

the National System does not automatically disqualify it for designation, but future construction of such structures is not allowed.

Across the Blue Mountains national forests, there are 11 rivers designated by Congress as wild and scenic. On those 11 rivers, about 153 miles are classified as wild, 68 miles as scenic, and 35 miles as recreational (see table 13).

Desired Condition: Eligible, suitable and designated wild and scenic rivers are free flowing, without impoundment, diversion, straightening, rip-rapping or other modification of the waterways. Water quality and outstandingly remarkable values for each are protected and enhanced. Development and access levels are consistent with the classification of the stream or stream segment as designated (or deemed suitable or eligible in the case of river segments that are not designated).

Table 13. Miles of designated wild and scenic rivers for each national forest

River Name	Wild	Scenic	Recreational
Malheur National Forest			
Malheur River	6.0	6.0	0.0
North Fork Malheur River	0.0	25.5	0.0
Totals	**6.0**	**31.5**	**0.0**
Umatilla National Forest			
Wenaha River	18.7	2.7	0.2
Grande Ronde River*	17.4	0.0	1.5
North Fork John Day River*	24.3	10.5	8.9
Totals	**60.4**	**13.2**	**10.6**
Wallowa-Whitman National Forest**			
Eagle Creek	4.0	6.0	17.0
Grande Ronde River*	17.4	0.0	1.5
Joseph Creek	8.6	0.0	0.0
Imnaha River	15.0	0.0	0.0
Lostine River	5.0	11.0	0.0
Minam River	39.0	0.0	0.0
North Fork John Day River*	3.5	0.0	6.9
North Powder River	0.0	6.0	0.0
Totals	**92.5**	**23.0**	**25.4**
Total All*	**141.5***	**67.7**	**34.5***

* The Grande Ronde and North Fork John Day rivers are listed above for both the Umatilla and Wallowa-Whitman National Forests as administration is shared. Mileage for the North Fork John Day River is divided within the table to reflect the mileage within and administered by each national forest. The Grande Ronde River is part of the administrative boundary between the Umatilla and Wallowa-Whitman National Forests, and the mileage is displayed equally for each of the national forests and is only counted once in the overall total.

** Designated wild and scenic rivers (Rapid and Snake rivers and part of the Imnaha River) within the HCNRA are not included in this table.

Table 14. Miles of eligible wild and scenic rivers for each national forest

River Name	Wild	Scenic	Recreational	Potential Outstandingly Remarkable Values
Malheur National Forest				
Lake Creek	3.3	0.0	0.0	Scenery
Umatilla National Forest				
Bear Creek	4.6	0.0	0.0	Fisheries
Butte-West Fork Creek	13.9	0.0	0.0	Scenery, fisheries
Desolation Creek	0.0	0.0	21.4	Recreation, botanical
Lookingglass Creek	8.7	0.0	0.0	Fisheries, hydrological
North Fork Desolation Creek	0.0	0.0	6.8	Botanical
North and South Fork Wenaha River	26.3	0.0	0.0	Scenery, fisheries, botanical
Sheep Creek (in Washington)	0.0	0.0	0.5	Scenery, fisheries, botanical
South Fork Desolation Creek	8.9	0.0	0.0	Fisheries, botanical
Tucannon River	9.1	4.6	8.7	Recreation, fisheries, cultural, botanical
Totals	**71.5**	**4.6**	**37.4**	
Wallowa-Whitman National Forest				
Big Sheep Creek	10.0	0.0	39.1	Recreation, fisheries, cultural
Dutch Flat Creek/Van Patton Creek*	5.3	0.0	0.0	Scenery, recreation, geological, hydrological, botanical
East Eagle Creek*	9.0	2.1	4.5	Scenery, recreation, fisheries, hydrological, geological, cultural
Five Points Creek*	0.0	12.1	0.0	Scenery, fisheries, wildlife
Killamacue/Rock Creek	10.2	8.6	0.0	Scenery, recreation, geologic, botanical
North Fork Catherine Creek	11.1	0.0	2.6	Scenery, recreation, fisheries, wildlife
Swamp Creek	7.6	0.0	9.2	Fisheries, wildlife, cultural
Upper Grande Ronde River	11.7	0.0	18.0	Recreation, fisheries, wildlife, cultural
Totals	**64.9**	**22.8**	**73.4**	
Total All*	**139.7**	**27.4**	**110.8**	

Wild Rivers

Wild river segments are free flowing and are generally inaccessible except by trail and/or water; the shorelines are essentially natural appearing. Signs of human activity, including structures or evidence of resource use, are minimal. Visitors have the opportunity to interact with a natural environment with minimal sights and sounds of other people. Wild rivers within designated wilderness areas meet the desired condition for MA 1A. The recreation opportunity spectrum is primitive to semiprimitive nonmotorized.

Scenic Rivers

Scenic river segments are free flowing. Shorelines and viewing areas are largely natural appearing but are accessible by roads in some places. Some recreation structures, evidence of timber harvest roads, and other evidence of human activity may be present but do not detract from the near natural appearance and scenic qualities of the immediate environment. A variety of water related recreational opportunities are available. The recreation opportunity spectrum is semiprimitive nonmotorized to semiprimitive motorized.

Recreational Rivers

Recreational river segments are free flowing and are readily accessible from roads. Some major public use facilities, such as developed campgrounds, administrative buildings, bridges, private residences, and commercial businesses, may be within the corridor. Considerable development and silvicultural treatments may have occurred and may be evident near the river. A range of recreational opportunities is available in settings where visitors are likely to share their recreational experience with other individuals or groups. The recreation opportunity spectrum is semiprimitive motorized to roaded natural.

Table 15. Miles of suitable wild and scenic rivers for the Wallowa-Whitman National Forest

River Name	Wild	Scenic	Recreational	Outstandingly Remarkable Values
Wallowa-Whitman National Forest*				
Dutch Flat Creek	5.3	0.0	0.0	Scenery, recreation, geological, hydrological, botanical
East Eagle Creek	9.0	2.1	4.5	Scenery, recreation, fisheries, hydrological, geological, cultural
Five Points Creek	0.0	12.1	0.0	Scenery, fisheries, wildlife
Totals	**6.0**	**31.5**	**0.0**	

* These rivers were determined suitable. Analysis is documented in the Dutch Flat Creek, Killamacue Creek, and Rock Creek Wild and Scenic River Study Report (1996) and Wild and Scenic River Study Report and Final Legislative EIS for Eight Rivers (1997).

MA 2B Research Natural Areas

Description: Research natural areas (RNAs) form a network of ecological reserves established for research and education purposes and for the maintenance of biodiversity. They are established to conserve unique ecological communities and are intended to promote and protect natural diversity. Research natural areas typify important vegetative, aquatic, and geological types, as well as other natural situations that have special and unique characteristics of scientific interest and importance.

Research, study, observation, monitoring, and educational activities that are nondestructive and nonmanipulative are generally allowed within research natural areas. While research natural areas are generally not suitable for livestock grazing, some incidental use by livestock could occur within these areas as administrative boundaries are typically not fenced. The network of established or proposed research natural areas within the national forests of the Blue Mountains is displayed in table 16.

Table 16. Research natural areas for each national forest

Area Name	Acres	Status	Change
Malheur National Forest			
Baldy Mountain	3,861	Proposed	Boundary update
Canyon Creek	738	Established	NA
Dixie Butte	335	Proposed	Boundary update
Dry Mountain	2,260	Established	NA
Dugout Creek[1]	908	Established	NA
Shaketable	385	Established	Boundary update
Silver Creek	802	Proposed	NA
Stinger Creek	1,663	Proposed	Boundary update
Strawberry Mountain	107	Proposed	New
Total	**11,059**		
Umatilla National Forest			
Birch Creek Cove	411	Proposed	NA
Kahler Creek Butte (formerly Kelly Creek Butte)	84	Proposed	NA
Mill Creek[2]	7,486	Proposed	Boundary update
Pataha Bunchgrass	63	Established	NA
Rainbow Creek	570	Established	NA
Vinegar Hill	424	Proposed	NA
Wenaha Breaks (formerly Elk Flats-Wenaha Breaks)	1,970	Established	Boundary update
Total	**11,008**		
Wallowa-Whitman National Forest			
Clear Creek Ridge	637	Proposed	New
Craig Mountain Lake	172	Proposed	NA
Glacier Lake	102	Proposed	NA
Haystack Rock	425	Proposed	NA
Horse Pasture Ridge	338	Proposed	NA
Indian Creek	1,003	Established	NA
Johnson (formerly Cougar Meadow)	131	Proposed	Name change
Lake Fork[1]	224	Proposed	Boundary update
Mount Joseph	705	Proposed	NA
Nebo[1]	1,695	Proposed	New
Point Prominence	365	Proposed	NA
Standley	742	Proposed	New
Gerald S. Strickler (formerly Government Meadow)	195	Established	Name change
Sturgill	139	Proposed	New
Tenderfoot Basin	891	Proposed	New
Vance Knoll	190	Established	NA
West Razz Lake	47	Proposed	NA
Total	**8,001**		

1. Acres within the HCNRA are not included in this table.
2. This research natural area is also a designated municipal watershed.

Desired Condition: Research natural areas and proposed research natural areas exhibit natural conditions with minimal human intervention, and ecological processes prevail. Under some circumstances (i.e., when there is an approved establishment report that includes a management plan), deliberate manipulation may occur to maintain the ecosystem or the unique feature for which the research natural area was established, except in wilderness areas. The recreation opportunity spectrum depends on the surrounding management areas.

MA 2C Botanical Areas

Description: Botanical areas have special values and unique natural characteristics. Botanical areas contain specimens, groups of plant colonies, or plant communities that are significant because of form, color occurrence, habitat location, life history, ecology, variety, or other features. While botanical areas are generally not suitable for livestock grazing, some incidental use by livestock could occur within these areas as administrative boundaries typically are not fenced. The network of established or proposed botanical areas within the national forests of the Blue Mountains is displayed in table 17.

Desired Condition: Botanical areas exhibit the natural composition, structure, and function of each area's unique ecosystem. The recreation opportunity spectrum depends on the surrounding management areas.

Table 17. Botanical areas for each national forest

Area Name	Current Acres	Proposed Acres	Change
Malheur National Forest			
Fergy Spruce Grove	29	29	No changes proposed
Cedar Grove	94	116	Updated calculation from current mapping
Totals	**123**	**145**	
Umatilla National Forest			
Charley Creek	50	111	Increased acres to protect unique values
Ruckel Junction	5	5	No changes proposed
Karl Urban	500	500	Name changed from Sheep Creek Falls Botanical Area
Shimmiehorn Canyon	197	197	No changes proposed
Sourdough	0	1,511	Proposed
Farr Meadows	0	12	Proposed
Elk Flats Meadow	0	97	Proposed
Totals	**695**	**2,437**	
Wallowa-Whitman National Forest			
None	NA	NA	NA
Total All	**818**	**2,582**	

MA 2D Geological Areas

Description: Geological areas have outstanding formations or unique geological features of the earth's development, such as caves, fossils, dikes, cliffs, or faults. These areas are protected or enhanced, and where appropriate, public use and enjoyment is fostered. The network of established geological areas within the Malheur and Umatilla National Forests is displayed in table 18.

Desired Condition: Geological areas display unusual formations and significant events. Developments provide public enjoyment and interpretation opportunities with high scenic, recreational, and historic value. Access within the areas is by nonmotorized trails. The recreation opportunity spectrum depends on the surrounding management areas.

Table 18. Geological areas for the Malheur and Umatilla National Forests

Area Name	Acres
Malheur National Forest	
Magone Lake	185
Tex Bridge	1
Total	**186**
Umatilla National Forest	
Big Sink	416
Wallowa-Whitman National Forest	
None	NA
Total All	**788**

MA 2E Historical Areas

Description: These areas are protected or enhanced, and, where appropriate, public use and enjoyment is fostered. These areas are usually small (generally less than 1,000 acres). Historical areas have historic sites, buildings, or objects of significance. The network of established historical areas within the Malheur and Umatilla National Forests is displayed in table 19.

Desired Condition: Historical areas demonstrate legacies unique to the area. Developments exist to enhance public enjoyment and interpretation. Their high historic value is maintained. The recreation opportunity spectrum depends on the surrounding management areas.

Table 19. Historical areas for the Malheur and Umatilla National Forests

Area Name	Acres
Malheur National Forest	
Sumpter Valley Railroad	13
Depression ERA CCC Buildings	11
Early and Intermediate Period Buildings	4
Historic Lookouts	7
Malheur Headwaters National Register District	4,950
Camas Oven Site	10
Pre-Mazama Site	10
Arch Rock Site	2
Historic Mining Districts	598
Obsidian Source Archaeological Complex	28,000
Total	**33,605**
Umatilla National Forest	
Greenhorn	90
Olive Lake-Fremont Powerhouse	1,000
Target Meadows	83
Total	**1,173**
Wallowa-Whitman National Forest	**NA**
None	
Total All	**34,778**

MA 2F Scenic Byways and All-American Roads

Description: The National Scenic Byways Program is a part of the U.S. Department of Transportation. The program is a grassroots, collaborative effort established to help recognize, preserve, and enhance selected roads throughout the United States. The U.S. Secretary of Transportation recognizes certain roads as All-American roads or national scenic byways based on one or more archeological, cultural, historic, natural, recreational, or scenic quality.

The purpose of the scenic byways program is to create a distinctive collection of designated roads, their stories, and treasured places by creating a unique travel experience and enhanced local quality of life through efforts to preserve, protect, interpret, and promote the intrinsic qualities of designated byways. Table 20 displays the miles of designated national and state scenic byways and designated routes within the Blue Mountains national forests. Each of the scenic byways has additional mileage outside of national forest boundaries.

Desired Condition: The scenic integrity of scenic byways is high. Scenic byways connect communities with the surrounding natural environment. Constructed features contribute to the attractiveness of the landscape and/or theme. The recreation opportunity spectrum depends on the surrounding management areas.

Table 20. Scenic byways within each national forest

Scenic Byway Name	Length (miles)	Designation
Malheur National Forest		
Journey Through Time Scenic Byway	13	State
Umatilla National Forest		
Blue Mountain Scenic Byway	48	State
Elkhorn Scenic Byway	3	State
Total	**51**	
Wallowa-Whitman National Forest		
Blue Mountain Scenic Byway	2	State
Hells Canyon Scenic Byway*	10	National
Journey Through Time Scenic Byway	21	State
Elkhorn Scenic Byway	52	State
Total	**85**	
Total All	**149**	

* A portion of the Hells Canyon Scenic Byway, an All-American Road, is within the HCNRA and is not included in this table.

MA 2G Nationally Designated Trails

Description: The National Trail System Act (1968) authorized the creation of a national trail system comprised of National Recreation Trails, National Scenic Trails, and National Historic Trails. These trails are included in the listing of specially designated areas because of their scenic, recreational, and historic value. Table 21 displays trails designated within the Malheur, Umatilla, and Wallowa-Whitman National Forests.

Table 21. Nationally designated trails within each national forest

Trail Name	Length (miles)
Malheur National Forest	
Arch Rock National Recreation Trail	0.3
Cedar Grove National Recreation Trail	1.0
Malheur River National Recreation Trail	8.0
Total	**9.3**
Umatilla National Forest	
Jubilee Lake National Recreation Trail	3.0
North Fork John Day National Recreation Trail	22.9
South Winom Creek National Recreation Trail	4.0
Total	**29.9**
Wallowa-Whitman National Forest*	
Elkhorn Crest National Recreation Trail	23.0
High Wallowa National Recreation Trail	2.0
Oregon Trail National Historic Trail	8.3
Total	**33.3**
Total All	**72.5**

* The following designated trails are within the HCNRA and are not included in this table: Nez Perce-Nee Me Poo National Historic Trail and the Western Rim/Summit Ridge, Heaven's Gate, and Snake River National Recreation Trails.

Desired Condition: Nationally designated trails meet standards commensurate with the significance of each trail. They are well maintained and are upgraded where necessary to minimize resource problems while providing a safe, consistent surface. Signage is adequate or is improved. Their high scenic, recreational, and historic value is evident. The recreation opportunity spectrum depends on the surrounding management areas.

MA 2H Scenic Areas

Description: Scenic areas are places of natural variety where unique physical characteristics provide pleasing views and dispersed recreational opportunities. Scenic areas are designated to protect or enhance, and, where appropriate, foster public use and enjoyment of areas with special landscapes noted for their natural beauty. There are three designated scenic areas within the national forests of the Blue Mountains. The network of established scenic areas within the Malheur and Umatilla National Forests is displayed in table 22.

Desired Condition: Scenic areas provide a variety of recreational opportunities for public use and enjoyment while remaining mostly natural in appearance. While roads provide motor vehicle access to the unique natural beauty and sense of vastness of these areas, the supply and visibility of existing roads is subordinate to the overall scenic character of the landscape. The scenic integrity of these areas is high to very high. The recreation opportunity spectrum depends on the surrounding management areas.

Table 22. Scenic areas within the Malheur and Umatilla National Forests

Name	Acres	Establishment
Malheur National Forests		
Vinegar Hill-Indian Rock Scenic Area	12,835	Established in 1966 by Regional Forester
Silver Creek Scenic Area	1,572	Proposed
Total	**14,407**	
Umatilla National Forest		
Vinegar Hill-Indian Rock Scenic Area	21,956	Established in 1966 by Regional Forester and amended in 1978 by adding the Desolation Unit
Grande Ronde Scenic Area	9,158	Established in 1979 by Regional Forester
Total	**31,114**	
Total All	**45,521**	

MA 2I Starkey Experimental Forest and Range

Description: The Starkey Experimental Forest and Range (Starkey) was established in 1940. It is managed to support existing research projects and to provide for future research needs. Experimental forests and ranges were established explicitly to conduct research benefitting and supporting National Forest System management. Management treatments on experimental forests and ranges generally are integrated with and support research projects. The national network of experimental forests and ranges, a land base authorized by Congress and designated by the Chiefs of the Forest Service over the last 100 years, provides sites where long-term ecological research can be maintained. Experimental forests and ranges are living laboratories where scientists not only make discoveries but also demonstrate relevant research results for cooperators and stakeholders. They provide opportunities to conduct the innovative research that will be required for sound management of future landscapes.

Starkey is a world-class research facility and a primary field location for long-term, operational scale scientific studies of the effects of management activities on ungulates and other wildlife, as well as effects of deer, elk and cattle on ecosystem process and function. Scientists conducting research at Starkey have generated numerous publications that have been instrumental in providing managers with defensible options and best management practices for managing roads and traffic, including off-road recreation, livestock grazing, and fuel treatments in relation to ungulates. Significant, long-term research on interactions between livestock and wild ungulates began in 1989, through a joint wildlife research project conducted by the Oregon Department of Fish and Wildlife, Oregon State University, and the U.S. Forest Service.

The Station Director will review and concur with management activities proposed within this Experimental Forest and Range.

Desired Condition: The Starkey Experimental Forest and Range provides opportunities to study deer, elk, cattle, and other wildlife, as well as other aspects of intensive forest and rangeland management including disturbance ecology (e.g., fire, insects and disease, large mammal grazing). A wide variety of land uses and human activities will continue to be included in management of Starkey including: active silviculture, fuels reduction, biofuel management, fire suppression, cattle grazing, public access, public uses of motorized and nonmotorized roads and trails, firewood cutting, camping and other nonconsumptive recreation, and protection of all research facilities. Public access and activities are managed to protect the facilities and meet research needs.

Depending on research objectives, studies range from nonmanipulative studies at very small scales, to experiments involving commercial timber harvesting across multiple stands. Typical forest practices, such as fuels reduction, prescribed fire, and timber harvest, are conducted as part of research direction and may result in a higher level of uncertainty of effects than is expected in other management areas, because research within experimental areas can include testing of novel prescriptions and management approaches. Timber harvest is allowed to meet specific resource objectives for Starkey. Timber harvest is not scheduled and does not contribute towards the allowable sale quantity.

Enclosures, exclosures, and long-term vegetation plots are maintained and protected to provide a continuous data stream to meet research objectives. However, future research may dictate treatment within these areas. Livestock management systems include (1) use of novel cattle grazing systems to facilitate habitat recovery in riparian systems, (2) manipulative ungulate treatments to evaluate cattle versus elk and deer herbivory effects on vegetation development, and (3) evaluating effects of ungulates on a wide variety of other resources (e.g., water quality, hydrology, nutrient cycling, forest productivity, and wildlife). The number of animals, as well as the allocation of this number between cattle, deer and elk, may be manipulated as part of the research conducted on the Starkey Experimental Forest and Range.

The recreation opportunity spectrum is roaded natural.

MA 2J Municipal Watersheds

Description: A municipal watershed is an area that serves a public water system as defined by the Safe Drinking Water Act. The act applies to systems that provide water for human consumption, have at least 15 service connections, or regularly provide water to at least 25 people. The act was amended in 1996 to require source water protection zones for groundwater wells that provide water for public use. The act regulates both community and noncommunity water systems.

Six communities in the Blue Mountains have water systems that derive water supplies directly from National Forest System lands (see table 23).

The definition of municipal watershed in current Forest Service regulations does not include communities served by a well or confined groundwater unaffected by Forest Service activities. However, the Safe Drinking Water Act of 1974 was amended in 1996 to require source water protection zones for groundwater wells that provide water for municipal use. Designation of municipal watersheds recognizes the need to protect public water supplies. Municipal watersheds may be managed for multiple uses so long as management activities do not degrade water quality.

Management of some municipal water supply watersheds is subject to the terms of existing agreements between the Secretary of Agriculture and the respective cities.

In general, management of the municipal watersheds displayed in table 23 is guided by existing agreements between the individual cities and either the Secretary of Agriculture or the Forest Service. Actions that could degrade water quality are either prohibited or are subject to approval by the respective city. For some communities, wells outside the national forest are the primary water source, but well-head protection zones may extend onto National Forest System lands.

Table 23. Designated municipal watersheds for each national forest

Watershed	Acres	City	Establishment
Malheur National Forest			
Long Creek Municipal Watershed	256	Long Creek, OR	1937 Special Use Permit
Byram Gulch Municipal Watershed	279	Canyon City, OR	1926 Special Use Permit
Total	**535**		
Umatilla National Forest			
Mill Creek Municipal Watershed	20,300	Walla Walla, WA	1918 Agreement between Secretary of Agriculture and City of Walla Walla
Total	**20,300**		
Wallowa-Whitman National Forest			
Baker City Municipal Watershed (multiple streams)	9,322	Baker City, OR	1912 Agreement with Department of Agriculture
La Grande City Municipal Watershed (Beaver Creek)	15,161	La Grande, OR	1935 Agreement with Department of Agriculture
Total	**24,483**		
Total All	**45,318**		

In addition to the municipal watersheds listed in table 23, nine communities in Oregon have watersheds or water sources located on or adjacent to National Forest System lands that should be protected in order to meet state source-water protection guidelines.

Within the Malheur National Forest

The town of Seneca uses two groundwater wells for its public water supply. The well-head protection zones for these wells may include National Forest System lands and require protection under the Safe Drinking Water Act. Prairie City obtains its water supply from Dixie Creek, which originates on National Forest System lands.

Twelve additional sites, including campgrounds and administrative sites and one privately owned site, provide water for public use and are regulated by provisions of the Safe Drinking Water Act as noncommunity water systems.

Within the Umatilla National Forest

The North Fork Umatilla River was designated as the municipal water supply for the city of Pendleton by the Oregon State Legislature in 1941. In 1984, the area was designated as a wilderness area and the city has since transferred its water intake to a point on the Umatilla River near the city of Pendleton.

Within the Wallowa-Whitman National Forest

The town of Granite has a water intake on National Forest System lands operating under special use permit. A wellhead protection zone for a groundwater well extends onto National Forest System lands.

The town of Halfway has municipal water rights on National Forest System lands but has converted the water system to groundwater sources on city-owned lands.

The upper Wallowa River, including Wallowa Lake, is designated by the Oregon Department of Environmental Quality as the municipal water supply for the city of Joseph. The city water intake is located near the outlet of Wallowa Lake and is not on National Forest System lands.

The city of Sumpter has a water intake operating under special use permit on National Forest System lands. The watershed is designated by Oregon Department of Environmental Quality as a municipal water supply.

The city of Wallowa owns municipal water rights on National Forest System lands (Bear Creek) but has converted its water system to groundwater sources on city-owned lands.

The communities of Richland and Greenhorn obtain their water from surface sources originating on National Forest System lands.

Fifteen additional sites within the Wallowa-Whitman National Forest, primarily campgrounds and administrative sites, provide water for human consumption and are regulated under the authority of the Safe Drinking Water Act as noncommunity water systems.

Desired Condition: With appropriate treatment, the quality of water used for human consumption meets or exceeds all associated state water quality criteria. The recreation opportunity spectrum is semi-primitive motorized.

MA 3A Backcountry (Nonmotorized Use)

Description: Use in MA 3A Backcountry (nonmotorized use) is nonmotorized year-round and is essentially primitive. Lands in this management area often provide high quality or undisturbed soil, water, and air; sources of public drinking water; diversity of plant and animal communities; habitat for species listed under the Endangered Species Act and other species that depend on large, undisturbed areas of land; primitive and semi-primitive nonmotorized dispersed recreation opportunities; natural appearing landscapes with high scenic quality, natural integrity, apparent naturalness, solitude and remoteness; and traditional cultural properties and sacred sites.

Desired Condition: Generally, natural ecological processes predominate.

The social setting is one of moderate to high challenge and risk, where people using these areas experience some isolation from the sights and sounds of others. Mechanized uses, such as bicycles, chainsaws, and generators, are allowed. Trail systems are constructed and maintained for use by hikers, equestrians, and cyclists. The scenic integrity of these areas is high. The recreation opportunity spectrum in MA 3A is semi-primitive or primitive nonmotorized.

MA 3B Backcountry (motorized use)

Description: Use in MA 3B Backcountry (motorized use) includes both motor vehicle use and nonmotorized use. These areas are relatively remote but may show signs of past activities. Motor vehicle access to these areas may be restricted seasonally, by route designations, or by area restrictions. These areas are characterized by semi-primitive nonmotorized and motorized dispersed recreation opportunities and modified appearing landscapes with moderate scenic quality.

Desired Condition: Generally, natural ecological processes predominate.

The social setting is one of moderate challenge and risk, where people using these areas experience some isolation from the sights and sounds of others. Motorized and mechanized uses, such as motorcycles, OHVs, snowmobiles, bicycles, and motorized equipment such as chainsaws and generators are allowed. Trails and primitive developments are constructed and maintained for both motor vehicle and nonmotorized users. The open motor vehicle route density within HUC5 watersheds in this management area is no greater than 1.5 miles of open motor vehicle routes per square mile. The recreation opportunity spectrum in MA 3B is semi-primitive or motorized.

MA 3C Wildlife Corridor

Description: Wildlife corridors are areas designed to maintain habitat linkages between wilderness areas. Although disagreement exists regarding the utility of corridors, this management area emphasizes management for landscape connectivity, which is “the degree to which the landscape facilitates or impedes movement among resource patches,” (Taylor et al. 1993) or “the functional relationship among habitat patches, owing to the spatial contagion of habitat and the movement responses of organisms to landscape structure,” (With et al. 1997). A wide variety of vegetation structure and composition is present, with some showing evidence of past human disturbance and others showing affects primarily from natural disturbances, such as wildfires. Both summer and winter motor vehicle travel is restricted to designated routes. Recreation users can expect to find evidence of human activity in the form of vegetation management, mining, and road building. However, many of the roads that are closed to motor vehicle travel occur in these areas.

Desired Condition: Wildlife species using these areas experience minimal human disturbance. Thinning forested vegetation results in variable densities, with greater than 40 percent canopy cover, over greater than 75 percent of the area, during the life of the plan.

The social setting is one of little challenge and risk. The area's many routes may not be available for motor vehicle travel. Within HUC5 watersheds in this management area, year round open motor vehicle route density is less than 1 mile per square mile, including over-the-snow motor vehicle routes. Over-the-snow motor vehicle travel is restricted to designated routes. Major travelways (i.e., state, county, and paved roads) remain open year round, and may be groomed for over-the-snow motor vehicle use in winter. The recreation opportunity spectrum in MA3C is semiprimitive motorized.

MA 4A General Forest

Description: General forest areas are managed to meet a variety of ecological and human needs. A wide variety of vegetative structure and composition is present, with some showing the effects of past management activities and others showing the effects of predominantly natural forces, such as wildfire, insects, and disease. These lands often display high levels of management activity and associated roads. Visitors expect to see other people and evidence of human activities.

Desired Condition: General forest contributes to the variety of native plant communities and the composition, structure, and patterns defined in the desired conditions. While the landscape is predominantly natural in appearance, there are some locations where the vegetation composition, structure, density and/or pattern is altered to meet short- or long-term management objectives that move the landscape towards the desired conditions. The area is maintained through ecological processes, as well as management activities. This management area contributes important habitat for aquatic, plant and wildlife species that benefit from functional habitat. Additionally, the area supplies a variety of dispersed or developed summer and winter recreational activities. Recreational use is generally dispersed and/or located at recreation developments, such as campgrounds with higher use levels. Facilities (whether Forest Service or permitted) are those necessary to provide public or resource benefit, or provide for safety. This area has Forest Service system and other authorized routes. A wide spectrum of travelway types are present, ranging from maintenance level 1 through 5 roads (closed roads to highways) to trails that serve as recreational features themselves. The recreation opportunity spectrum in MA4A is roaded natural.

MA 4B Riparian Management Areas

Description: Riparian management areas (RMAs) are areas that include portions of watersheds where aquatic and riparian-dependent resources receive primary emphasis and where special management direction applies. Riparian management areas encompass lands adjacent to permanently flowing streams, ponds, lakes, wetlands, seeps, springs, and intermittent streams, including geologically unstable sites that may influence these lands. Riparian management areas will generally have minimum widths but are designed to extend to the outer edge of riparian vegetation, or to the outer extent of the 100-year floodplain, whichever is greater. Riparian management areas are managed to maintain and restore the riparian structure and function of intermittent and perennial streams, confer benefits to riparian-dependent plant and animal species, enhance habitat conservation for organisms that are dependent on the transition zone between upslope and riparian areas, and provide for greater connectivity within and between watersheds for both riparian and upland species.

Acres associated with MA 4B are only those acres within MA 4A General Forest. However, the desired conditions and standards and guidelines that apply to MA 4B apply to all riparian management areas (table 24).

Table 24. Riparian management area widths

Category	Minimum Riparian Management Area Width*
Fish-bearing streams	300 feet slope distance on either side of stream or to outer edge of 100-year floodplain, whichever is greatest
Permanently-flowing non-fish-bearing streams	150 feet slope distance on either side of stream or to outer edge of 100-year floodplain, whichever is greatest
Constructed ponds, reservoirs and wetlands greater than 1 acre	150 feet slope distance from the outer edge of wetland or from the maximum pool elevation, whichever is greatest
Lakes and natural ponds	300 feet slope distance
Seasonally-flowing, intermittent and ephemeral streams, wetlands smaller than 1 acre, and unstable areas	100 feet slope distance

* Additional delineation criteria apply, as described in the glossary.

Riparian vegetation performs numerous key functions for stream ecosystems, including the provision of shade, bank stability, nutrient transfer, retention of organic material, and the supply of woody material.

Because riparian plant species vary in their establishment mechanisms, water requirements, and tolerance to flooding, differences in channel and floodplain morphology result in high spatial and temporal variability in species composition and age class structure within and along riparian zones. This makes riparian areas among the most biologically diverse and productive habitats on the landscape.

Healthy riparian areas are important for the protection of the water quality upon which aquatic species depend and are also used by approximately 75 percent of terrestrial vertebrate species in the Blue Mountains (Raedeke 1989, Thomas 1979). In addition, riparian areas provide critical habitat for numerous sensitive, rare, or uncommon plant and lichen species. Management activities within riparian management areas are designed to maintain, enhance, or restore, as applicable, the ecological processes responsible for the diversity, productivity, and sustainability of riparian habitats.

Management of riparian management areas focuses on the ecological processes and conditions within the riparian management areas and contributes to the value of the aquatic and riparian habitats they contain.

The full definition and criteria for delineating riparian management areas are in the glossary.

Desired Condition: Riparian management areas within any given watershed reflect a natural composition of native and desired nonnative plant and animal species and a distribution of physical and vegetative conditions appropriate to natural disturbance regimes affecting the area.

Key riparian processes and conditions, including slope stability and associated vegetative root strength; wood delivery to streams; input of leafy and organic matter to aquatic and terrestrial systems; solar shading; microclimate; and water quality, are within ranges typical of the

biophysical setting and the corresponding disturbance regime. The recreation opportunity spectrum in MA4B is semi-primitive to primitive.

Acres associated with MA 4B are only those acres within MA 4A General Forest. However, the desired conditions and standards and guidelines that apply to MA 4B apply to all riparian management areas.

MA 5 Developed Sites and Administrative Areas

Description: Developed sites, administrative areas, and permitted uses such as ski areas, developed campgrounds, recreation residences, administrative sites, communication sites, and utility corridors, are generally limited in extent to meet their designated purpose and occur as a place or feature on the landscape. Ecological values are conserved while protecting the health and safety of humans. Livestock grazing within developed and administrative sites is generally unsuitable, although some administrative sites are used to pasture Forest Service administrative stock. Transportation and motor vehicle access varies. Roads and trails typically are limited and provide access to the main site features, such as buildings, permit areas, and campsites. Some of these areas are used for administrative purposes such as employee housing, storage, and long-term condition and trend studies and conifer seed orchards. Though small, these areas are important data collection points that assist with understanding ecosystem function and resilience.

Desired Condition: Infrastructure design promotes employee, permit holder, and visitor safety. The appearance is neat, orderly, and complementary to the surrounding landscape setting. Facilities, structures, and other built elements blend with the natural landscape where possible and are consistent with landscape architecture principles found in the Forest Service Built Environment Image Guidelines (USDA Forest Service 2001). The scenic integrity of these areas is commensurate with the inventoried scenic class. Snags and down wood levels are generally less than in other management areas or are absent due to safety concerns. Administrative studies and seed orchards are maintained. The level of development of buildings and ancillary structures, such as water and power systems, is commensurate to support the objective of the developed site, permit area, or administrative area without exceeding the desired condition for scenic integrity in the area.

Vegetation treatments may include consideration of wildfire protection objectives, which may over-ride ecological desired conditions. In these instances, vegetative structure would result in fire intensity that allows for safe and effective suppression actions.

The recreation opportunity spectrum in MA5 is roaded natural to rural. The following descriptions further explain the desired conditions for specific facility types within the three national forests.

Communication Sites

Desired Condition: Communication facilities and ancillary features are designed to be consistent with the designated purpose while maintaining human health and safety values and inventoried scenic class. New facilities are designed to minimize impairing scenic, natural, and cultural resource values and to blend with the natural appearing landscape, repeating the form, line, color, and texture of the surrounding valued landscape character. Existing sites and facilities are improved to mitigate affects to on-site values and visual appearance, and to be consistent with the inventoried scenic class.

Utility Corridors

Desired Condition: Utility corridors and ancillary features are designed to be consistent with the designated purpose of providing power and telecommunication services to communities. Human health and safety values are maintained. Proposed new facilities are evaluated for compatibility with existing corridors and scenic, natural, and cultural resource values. Horizontal lines are softened through feathering and scalloping the edges of the corridors commensurate with vegetative and other resource needs. Proposals for new corridors are designed to minimize the visibility of the corridors and repeat the form, line, color and texture of the surrounding valued landscape character.

Developed Recreation Sites and Facilities

Desired Condition: Developed public facilities are operated by Forest Service personnel or permit holders. Sites such as campgrounds, picnic areas, trailheads, snow-parks, and boating and interpretive sites, are well maintained, fully functional, provide for visitor safety, and are accessible to people with disabilities. Potable water and sanitary systems are limited yet are provided at some sites and meet required health standards. Areas of highly concentrated use provide a full suite of amenities that provide for diversity of users. The facilities are fully utilized with occupancy rates approaching full capacity during peak use periods and moderate occupancy rates during nonpeak summer and fall periods. Facilities provide some comfort for the user as well as site protection. New construction and reconstruction projects utilize a contemporary/rustic design based on the use of native or durable materials. Impacts to natural resources from concentrated visitor use are minimal. Partnerships with permit holders are encouraged and sustained at high-end public developed areas, such concessionaire-operated campgrounds.

Permitted Recreation Facilities

Desired Condition: Special use permit holders operate private facilities within the terms and conditions of the permit. Public uses are allowed at permitted sites such as lodges, organization camps, and trams. Private users are permitted at facilities such as recreation residences. No new recreation residence tracts or unoccupied lots are permitted. The recreation opportunity spectrum in MA5 is rural. The following descriptions further explain the desired conditions for specific facility types within the three national forests.

Ski Areas

Desired Condition: Facilities and structures are designed to blend with the natural environment, using the principles in the Built Environment Image Guide for the National Forests and Grasslands (USDA Forest Service 2001). Removal of vegetation for ski runs is designed to blend with the natural patterns of the surrounding valued landscape character. Activities are consistent with the approved master development plan.

Administrative Sites

Desired Condition: Administrative facilities include guard stations, administrative sites, pastures and airstrips and are safe, efficient, cost-effective, and are maintained at a function and use level that meets management needs and provide for universal accessibility. Facilities meet all applicable health and safety standards. Impacts to natural resources are minimal. Administrative facilities complement natural settings. The form of structures is derived by the function and from the landscape setting. For example, structures in mountainous, timbered landscapes have steep rooflines and broad eaves and use durable indigenous materials, such as stone and heavy timbers, with the appearance derived from the local environment. Structures, signage, and other built

environment elements reflect the style and character inherent in the local environment (USDA Forest Service 2001).

Management area designations and names follow:

MA 1A Congressionally Designated Wilderness Areas
MA 1B Preliminary Administratively Recommended Wilderness Areas
MA 1C Wilderness Study Area
MA 2A Wild and Scenic Rivers (includes designated, eligible, and suitable rivers)
MA 2B Research Natural Areas
MA 2C Botanical Areas
MA 2D Geological Areas
MA 2E Historical Areas
MA 2F Scenic Byways and All American Roads
MA 2G Nationally Designated Trails
MA 2H Scenic Areas
MA 2I Starkey Experimental Forest and Range
MA 2J Municipal Watersheds
MA 3A Backcountry (nonmotorized use)
MA 3B Backcountry (limited motor vehicle use)
MA 4A General Forest
MA 4B Riparian Management Areas
MA 5 Developed Sites and Administrative Areas

Suitability of Areas

An area may be identified as generally suitable for uses that are compatible with desired conditions and objectives for that area. An area may be identified as generally not suitable for uses that are not compatible with desired conditions and objectives for that area. Identification of an area as generally suitable or generally not suitable for a use is guidance for project and activity decision making and not a commitment nor a final decision approving projects and activities. Uses of specific areas are approved through project and activity decision making.

Management areas are used in this forest plan to help further refine suitable uses and guide management.

For ease of reference, general suitability determinations for management areas are listed in table 25.

Management Focus

The management focal points describe how the goals and desired conditions and objectives may be applied to guide development of projects and activities on National Forest System lands. These three interconnected points (areas of restoration need) are the most important in the Blue Mountains:

- Restoring and Maintaining Terrestrial Vegetation Conditions
- Restoring and Maintaining Watershed Conditions
- Restoring and Maintaining Social and Economic Conditions

The themes reflect that the restoration needs are great, that socio-economic needs are great, and that neither can be met nor sustained without the other. Much of the forested and nonforested vegetation in the Blue Mountains is highly departed from desired conditions. Dry forest vegetation types have both the greatest extent of departed acres and the greatest level of departure. Alteration of vegetative conditions has cascading effects on the extent and quality of terrestrial wildlife habitats and watershed conditions. Riparian and aquatic habitats in the Blue Mountains have become fragmented to the extent that local populations of some aquatic species have become extinct, while the sustainability of remaining species is at increasing risk. Many rural communities throughout the Blue Mountains have been affected because of downturns in local economies that can be associated in part with declines in the delivery of forest products. Many rural communities continue to be heavily dependent on forest products and services.

The overall strategy incorporates the assessment that the level of restoration needs within the Blue Mountains is large and exceeds the capacity of the workforce and current budgets. As a consequence, there is a need to prioritize implementation of projects in order to efficiently use available resources. Those projects that benefit multiple resource areas will have a higher priority than those that benefit just one resource. Information contained in the State of Oregon Conservation Strategy, Northwest Power Planning Council subbasin assessments, ICBEMP scientific assessments, Nature Conservancy Portfolio Planning, Community Wildfire Protection Plans, and local forest assessments was utilized in the development of the management focus.

Table 25. General suitability matrix for management areas

Use or Activity	Management Area																		
	1A	1B	1C	2A	2B	2C	2D	2E	2F	2G	2H	2I	2J*	3A	3B	3C	4A	4B	5
Timber production	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	S	U	U
Timber harvest	U	U	U	S	U	S	S	S	S	S	S	S	S	S	S	S	S	S	S
Grazing (cattle and sheep)	S	S	S	S	U	U	S	S	S	S	S	S	U	S	S	S	S	S	U
Motor vehicle use (summer)[1]	U	U	U	U[2]	U	S	S	S	S	S	S	U	U	U	S	S	S	S	S
Motor vehicle use (winter)	U	S	U	U[2]	U	S	S	S	S	S	S	U	U	U	S	S[1]	S	S	S
Road construction	U	U	U	U[2]	U	U	S	S	S	U	S	U	U	U	U	S	S	U	S
Trail construction (for motor vehicle use)	U	U	U	U[2]	U	U	S	S	S	U	S	U	U	U	S	S	S	U	S
Mechanical fuel treatment	U	U	U	U[2]	U	U	S	S	S	S	S	S	S	S	S	S	S	S	S
Energy development (wind farms, utility corridors, pipelines, etc.)	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	S	U	S

S designates use or activity as generally suitable. Refer to desired conditions and standards and guidelines for each management area and/or use for specific guidance.

U designates use or activity as generally unsuitable. Refer to desired conditions and standards and guidelines for each management area and/or use for specific guidance.

* All activities in municipal watersheds are dependent on the agreement for management of the watershed between the Forest Service and the municipality.

1. indicates generally suitable applies only to use or activity on designated roads and trails and within designated areas.

2. indicates generally not suitable for wild and scenic rivers, generally suitable for recreational rivers.

Restoration will be accomplished by a combination of active and passive management. Active management will be concentrated in areas that have established road systems and where previous investments in the land have been made. Undeveloped areas will remain largely undeveloped, and unplanned fire will be the main tool utilized to improve ecosystem resilience in those areas. The full range of wildfire suppression strategies, from aggressive suppression to monitoring, will be used within all areas so long as the effects are compatible with maintaining or achieving desired conditions. The strategy also recognizes that restoration won't just occur in areas that are the most departed from the desired conditions. By treating areas (maintaining areas) that are close to or are at the desired condition, management may prevent a departure that could result in the need for expensive restoration treatments.

Restoring and Maintaining Terrestrial Vegetation Conditions

The cumulative effects of a periodic and sometimes extended drought, climate change, increasing vegetative density, shifts in forest species composition, and modified landscape patterns have created vegetative conditions in many locations that are at high risk of impacts from large and uncharacteristically severe wildfires, and disturbances from insects and disease. Approximately 60 percent of the three national forests have a moderate to highly increased potential for uncharacteristically severe wildfire effects. Old forest (particularly ponderosa pine) has declined significantly from historic levels. The abundance of mid-age, multi-layer (stem exclusion and understory reinitiation), dense, fir dominated stands has increased substantially, especially in dry forest types. Many invasive species have become well-established and are difficult to eliminate, and some infestations could become more extensive.

These vegetation changes, along with human disturbance factors (i.e., roads and grazing), have placed numerous plant and animal species at risk. For some species, the quality and quantity of habitat is below the level necessary for sustainability. Some species may have more habitat; however, the habitat itself may not be sustainable or the human disturbance factors may render the habitat less than fully functional.

The management approach includes creating more resilient and sustainable terrestrial ecosystems that maintain future management options by:

- Implementing appropriate invasive plant prevention practices to help reduce the introduction, establishment, and spread of invasive plants associated with management actions and land use activities
- Modifying stand conditions to reduce the likelihood of uncharacteristically severe disturbances from wildfires and insects and disease
- Improving the geographic extent, connectivity, and stand structure of plant and animal habitat
- Creating a landscape better able to respond in a positive way to climate change
- Concentrating active restoration activities (timber harvest, fire, and thinning) primarily, but not exclusively, in the dry environment, as the dry vegetation type is generally the most departed from the desired condition
- Concentrating active restoration in areas with established road systems and previous treatments (plantations, past thinning areas, etc.)
- Emphasizing treatments in wildland-urban interface, municipal watersheds, other areas of high social values
- Using planned and unplanned fire to accomplish restoration objectives

There are multiple risks to restoring terrestrial conditions, and the existing conditions and restoration and maintenance opportunities will vary within the planning area. The approach will manage short-term risks to achieve long-term benefits.

To create a landscape that is more resilient and better able to respond to climate change, management activities will be designed to maintain specific conditions, such as:

- A larger portion of the landscape that contains larger diameter overstory trees with reduced amounts of smaller diameter understory trees
- Longer forest stand rotations
- Greater abundance of early seral tree species (ponderosa pine and larch)
- Fewer multi-storied stands
- Lower stand densities, especially in areas that are uncharacteristically dense.
- Planting of tree species (includes genetic considerations) that are likely to be better adapted to the expected climate and changed species distribution
- The increased use of biomass for alternative uses as demand increases and technology becomes available
- Conditions that are less susceptible to invasive species

This desired landscape will allow more flexibility in responding to potential effects of climate change, including longer fire seasons and increased moisture stress in the summer. The desired landscape will provide a better contribution to carbon storage by reducing the uncharacteristic effects of wildfire and storing more carbon in larger diameter trees. The desired landscape will also benefit wildlife species that favor large diameter trees. A more resilient landscape will be less susceptible to uncharacteristically severe disturbance from wildfires and insects and diseases and will provide for the full range of habitats for native terrestrial plant and animal species, while contributing to a sustainable flow of natural resources from National Forest System lands.

Restoring and Maintaining Watershed Conditions

The overall strategy is to accelerate improvement of watershed and aquatic/riparian conditions across the landscape by: 1) conducting new and ongoing management activities in a manner that, across broad scales, protects areas in good condition and allows for passive recovery of those that are degraded; 2) actively restoring conditions at watershed scales in high-priority areas by implementing integrated, strategically-focused sets of restoration treatments that facilitate recovery of critical watershed processes.

This strategy is an updated and enhanced version of the Forest Service's existing aquatic strategy known as PACFISH (USDA and USDI 1995) and INFISH (USDA Forest Service 1995a). It consists of five essential elements: riparian management areas, key watersheds, mid-scale analysis of watersheds, watershed restoration, and monitoring. These elements work together to achieve a distribution of watershed conditions that are resilient to natural disturbance and that maintain, restore, and enhance habitat for resident and anadromous fish and other aquatic and riparian dependent organisms:

Riparian management areas are areas bordering perennial and intermittent streams in which the management emphasis is to maintain, restore, or enhance the ecological health of aquatic and riparian ecosystems.

Key watersheds are subwatersheds, or groups of subwatersheds, selected to serve as strongholds for important aquatic resources or that have the potential to do so.

Mid-scale analysis is a procedure used within the Pacific Northwest for evaluating the geomorphic and ecological processes operating within watersheds and is used to assess the condition and trend of watershed, riparian, and aquatic ecosystems and provide the basis for watershed-scale restoration.

Watershed restoration is an integrated set of both passive and active actions intended to facilitate the recovery of the physical, biological, and chemical processes that promote the maintenance or recovery of riparian and aquatic ecosystem structure and function.

Monitoring is a strategic assessment of the implementation and effectiveness of management actions and a means of determining whether or not progress toward achieving desired conditions is being made.

Implementation of the watershed restoration element is tiered to the regional Aquatic Restoration Strategy, which uses a strategic, integrated, multi-scale approach to prioritizing watershed restoration treatments. The highest priority is to first restore critical watershed processes in those areas in which the structure and function of the aquatic ecosystem are largely intact, but are threatened by existing or projected watershed conditions. Watersheds with highly degraded aquatic ecosystems are a lower priority for restoration until threats to existing strongholds (e.g., key watersheds) are mitigated.

Watershed conditions in the Blue Mountains have been altered by a series of human uses during the last 150 years, including mining, logging, agriculture, water diversions, flood control, wildfire suppression, grazing, road construction and maintenance, and hydro-electric development. The ability of watersheds to function has been affected by the alteration of vegetation conditions, increased erosion, and changes in the rates and magnitude of watershed runoff (McIntosh et al. 1994). The resulting degradation and fragmentation of aquatic and riparian habitats has led to widespread decline or outright extinction of many resident and anadromous fish stocks and the listing of several fish stocks under the Endangered Species Act in the early 1990s. Of the 214 remaining salmonid stocks identified by Nehlsen et al. (1991) in the Columbia and Klamath basins, 101 are considered at high risk of extinction. Only 2 percent of salmon, steelhead, and cutthroat trout populations in the Columbia Basin are classified as strong (Thurow et al. 2000). In the Blue Mountains, Nehlsen et al. (1991) identified 17 extinct salmonid populations:

- Spring/summer Chinook salmon from the Umatilla, Walla Walla, and Malheur Rivers
- Fall Chinook salmon from the Umatilla and Walla Walla Rivers
- Coho salmon from the Grande Ronde, Wallowa, Tucannon, Walla Walla, Snake, and Umatilla Rivers
- Chum salmon from the Umatilla and Walla Walla Rivers
- Sockeye salmon from the Wallowa River
- Steelhead trout from the Malheur, Powder, and Burnt Rivers

In addition, Snake River Chinook salmon and steelhead are listed as threatened under the Endangered Species Act and mid-Columbia Basin steelhead are listed as threatened. Bull trout are listed as threatened within their entire range in the western United States.

In the Blue Mountains, as elsewhere in the Pacific Northwest, remaining high-quality aquatic habitats are largely located on Federal lands but are often fragmented or disconnected from other high-quality habitats, resulting in reduced ability of aquatic species to access or move between habitats. The quality and types of available habitats may no longer encompass the range of habitats that existed historically and may not, in some cases, be sufficient to support the full range of life histories of affected aquatic species.

Aquatic habitats on National Forest System lands in the Blue Mountains once supported culturally and economically important populations of freshwater species, including anadromous and resident fishes (Chinook salmon, steelhead, redband trout, and bull trout), lamprey, and mussels. In most cases, declines in the populations of these species can be traced to habitat degradation (Gregory and Bisson 1997).

It is generally recognized that preservation of existing high-quality habitats and remaining strong populations is critical to the continued survival of anadromous and resident fish populations (Reeves et al. 1995). In addition, restoration efforts should focus on restoring the key ecological functions responsible for the creation and maintenance of aquatic and riparian habitats in order to make those ecosystems self-sustaining (Beechie and Bolton 1999, Naiman et al. 1992).

The focus of watershed restoration is to complete needed restoration work from ridgetop to valley bottom in order to have healthy watersheds. It should be recognized that not all watersheds will be in good condition at the same time and that the condition of some existing high-quality watersheds will eventually be degraded by future disturbance and that replacement habitats will be needed for some populations of aquatic and riparian species (Reeves et al. 1995).

Because of the extent of decline in populations of some aquatic species and the degradation of their habitats, protection of remaining strong populations and their habitats is crucial to their recovery (Sedell et al. 1997). A network of key watersheds is identified in order to meet this need. Key watersheds have a combination of relative population strength for one of four aquatic species (Chinook salmon, steelhead, inland redband trout, and bull trout), good watershed conditions, and good aquatic and riparian habitat condition (Reiss et al. 2008). Key watersheds are identified at the subwatershed level (U.S. Geological Survey, HUC 6; Federal Geographic Data Committee 2004).

Some of the attributes of key watersheds that make them important for aquatic species may also make key watersheds important habitats for terrestrial wildlife species. Key watersheds may encompass a variety of habitats important to various wildlife species, including source habitats, summer range, winter range, refugia, and migration corridors. In addition, key watersheds are likely to be less affected by past land uses and are therefore more likely to be important to the maintenance of water quality and quantity for a variety of downstream uses, including human uses.

The overall strategy is to protect and restore whole watersheds, while reducing risk to remaining populations of aquatic species and increasing the availability and connectivity of high quality aquatic and riparian habitats. Watersheds in good condition should be preserved by reducing existing impacts, implementing best management practices, and through more comprehensive project design. Watershed restoration activities will be prioritized so that investments are made in areas that have the highest restoration potential while providing the greatest benefit to multiple resources and the least risk to existing populations. These areas are identified as priority watersheds in the project record. Restoration actions may take place in areas of lower priority as circumstances warrant and as opportunities are presented.

Land managers should recognize and seek to restore the processes responsible for creating and maintaining aquatic and riparian habitats, as well as the diversity of those habitats. This may include, but is not limited to:

- Altering the structure and composition of upland vegetation in order to make progress toward achieving desired conditions
- Managing vegetation to reduce wildfire risk and restore stand structure and resiliency
- Reducing road-related erosion and sediment delivery to streams through road closure, road obliteration, improved maintenance, and/or improved erosion control
- Removing barriers that block or restrict access to historically occupied habitats or restrict connectivity between habitats
- Altering riparian habitats to favor deciduous trees and shrubs as appropriate where such species were formerly abundant
- Reintroducing keystone species, such as beaver, into suitable habitats within their former range
- Increasing the diversity and complexity of aquatic and riparian habitats by promoting natural establishment and succession of riparian plant communities
- Restoring the natural range of stream flows to the extent possible
- Managing invasive species to maintain the composition and diversity of native species
- Restoring complexity and aquatic and riparian habitat
- Adapting management actions to account for the expected effects of climate change

Key watersheds are located in each of the 15 subbasins with streams originating on National Forest System lands. Fifty-eight subwatersheds that are considered the highest priority for restoration have restoration work that either is ongoing or is expected to begin within the next 10 to 15 years. The full list of key watersheds, including maps, is available from the project record.

Restoring and Maintaining Social and Economic Conditions

Ecological conditions and forest management practices are driven by human values and the choices they have fostered (Cronon 1996, Langston 1996, Newell et al. 2005). Since its creation more than a century ago, the Forest Service has been charged with protecting watersheds and other resources, as well as with providing the American public with recreational opportunities and a flow of goods and services. Additionally, the Forest Service has been charged with meeting legal obligations to American Indian tribes.

A sustainable flow of social amenities depends upon sustainable ecological management practices in watersheds and with terrestrial species. Sustainability requires a symbiotic relationship between social, economic, and ecological aspects of ecosystem management (Formann 1995, Wright 2002).

The management approach is designed to restore and maintain scenery, cultural resources, treaty resources, recreation resources, and the wildland urban interface, as well as contribute to economic opportunities for local communities by:

- Improving the integration of land and resource management with local community and tribal economic development strategies and capabilities

- Improving the quality, diversity, and sustainability of natural resource related jobs and businesses
- Supporting actions to help achieve the goals of greater economic diversity, resilience, and vitality for rural and tribal communities
- Developing the utilization of community capacity and infrastructure to the extent practicable to accomplish ecosystem restoration objectives

Integration of the Management Focus

The identification of focal points highlights those areas where immediate improvements to the resiliency of the system could be made or that are most sensitive from a social perspective. Considering the factors discussed previously, the drivers for active restoration priorities are:

- Priority watersheds
- Wildland-urban interface
- Dry upland forest potential vegetation groups

A primary assumption for active restoration is that activities will occur in areas with established road systems (primarily within MA 4 General Forest). Areas where multiple factors overlap are a higher priority than those with only a single factor. Depending on cost sharing or other factors, lower priority work may still occur before higher priority work. This prioritization also recognizes the need for maintenance activities to prevent areas from becoming departed and then needing more expensive restoration treatments.

Objectives

Objectives are projections of Forest Service activities and program outcomes that are measurable and time specific. Like goals and desired conditions, objectives are not commitments or final decisions approving projects or activities. They are an effort by the Forest Service to share with the public the way progress toward achieving or maintaining the desired conditions during the life of the plan will be measured. The objectives stated are only a partial list of the management activities expected to be accomplished to contribute to maintaining or achieving desired conditions (table 26).

Objectives are based on ecological needs, community capacity, and expected funding, including budgets, partnerships, and cooperative agreements. The actual accomplishments will be dependent on actual funding, staffing levels, and local infrastructure. The objectives are not intended to limit or guarantee the amount of work that will be accomplished. More work may be accomplished if additional infrastructure or funding, such as increased budget allocations, partnerships, or other external sources, becomes available. Less work could occur if funding is less than expected, additional infrastructure is not constructed, or existing infrastructure declines and becomes unusable.

Objectives are expected to be accomplished during the first decade of the plan period, unless otherwise indicated within the objective statement. The objectives reflect the activities and program outcomes necessary to achieve or maintain desired conditions. Objectives are displayed for each the Blue Mountains national forests in the following table. The table displays the portion of the Ochoco administered by the Malheur as part of the Malheur.

Table 26. Objectives and associated desired conditions for each national forest

Objective Statements	Malheur	Umatilla	Wallowa-Whitman
1.1 Watershed Function[2]			
(W1) Increase the number of watersheds in condition class 1 (from CC2) and 2 (from CC3) through active restoration. Measure: number of subwatersheds (HUC6) with improved condition class.	16 watersheds	14 watersheds	24 watersheds
Improve hydrologic function by: • Improving forest vegetative conditions (acres) (WH1)	7,800 acres (annually)	6,600 acres (annually)	7,300 acres (annually)
• Improving soil hydrologic function in areas of detrimental soil disturbance (acres) (WH2)	600 acres	750 acres	950 acres
• Reducing road-related sedimentation by reducing road density and reducing hydrologic connectivity of the road system (road miles) (WH3)	30-35 miles road surface treated (annually)	30-35 miles road surface treated (annually)	30-35 miles road surface treated (annually)
Improve riparian and wetland function by: • Restoring floodplain connections, channel morphology, channel structure, and flow regime (flood flows and low flows) (stream miles) (WR1)	80 miles	90 miles	90 miles
• Restoring riparian/wetland species composition (riparian acres) by increasing natural seedling establishment, planting, fencing, or modifying riparian management (riparian acres) (WR2)	300 acres	165 acres	225 acres
• Increasing effective stream shade (WQ objective 1) by increasing amount and extent of woody riparian species and increasing age-class structure of terrestrial vegetation in MA 4B (stream miles) (WR3)	450 miles	225 miles	375 miles
Improve riparian and wetland function by (continued): • Increasing extent and vegetative species diversity of off-channel and isolated wetlands by restoring hydrologic pathways, modifying existing water diversions, or fencing (number of sites) (WR4)	30 sites	40 sites	40 sites

[2] All measures are proposed in priority watersheds.

Objective Statements	Malheur	Umatilla	Wallowa-Whitman
• Increasing the number and extent of beaver-created wetlands (sites)	12 sites	10 sites	12 sites
Improve stream channel and aquatic habitat function by: • Improving riparian habitat conditions (riparian acres, WR1-3)	600 acres (annually)	525 acres (annually)	675 acres (annually)
• Restoring channel morphology to reflect natural conditions (miles)	38 miles	45 miles	60 miles
• Increasing habitat complexity through channel reconstruction, placement of large wood or other structures, habitat enhancement (miles)	75 miles	90 miles	113 miles
• Increasing aquatic habitat connectivity through culvert replacement (number of culverts)	90 culverts 143 stream miles	75 culverts 68 stream miles	90 culverts 135 stream miles
1.2 Species Diversity			
In cooperation with state wildlife agencies, expand bull trout occurrence within 10 years into unoccupied suitable stream segments within its historic range.	1 segment	1 segment	1 segment
Increase the amount and quality of source habitat (open, OFSS in the dry upland forest PVG) for white headed woodpecker (per decade).	64,000 acres	12,000 acres	11,000 acres
Increase the amount and quality of source habitat (open canopy dry/moist upland forest PVG) for western bluebird and Cassin's finch.	49,000 acres (finch)	78,000 acres (bluebird)	66,000 acres (bluebird) 12,000 acres (finch)
Maintain mule deer security cover on a percentage of the landscape within MA 4A (varies by alternative).	24% of landscape	29%	33%
Restore stronghold watersheds connectivity for aquatic species.	4-6 subwatersheds or 80-120 stream miles	3-5 subwatersheds or 60-100 stream miles	6-9 subwatersheds or 120-180 stream miles
Reduce juniper canopy cover to less than 10 percent in sagebrush steppe habitat.	800 acres		
Reduce sagebrush density to less than 10 percent canopy cover in sagebrush steppe habitats where sagebrush canopy cover is greater than 25 percent.	700 acres		

Objective Statements	Malheur	Umatilla	Wallowa-Whitman
1.4 Disturbance Processes			
1.4.1 Wildland Fire (Planned and Unplanned Ignitions)			
Treat stands using silvicultural treatments and/or prescribed burning (planned ignitions) to move towards Fire Regime Condition Class 1 and 2 in the dry and moist upland forest PVGs or to protect values at risk from wildland fire.	220,000 acres	220,000 acres	220,000 acres
Treat stands using silvicultural treatments and/or prescribed burning (planned ignitions) to decrease the potential for high severity wildfire in the dry upland forest PVG or to protect values at risk from wildland fire.	185,000 acres	125,000 acres	140,000 acres
Manage wildfires (unplanned ignitions) for resource benefits: modify species composition, stand density, structural stages, fire frequency, and fire severity to move Fire Regime Condition Class 2 and 3 to Fire Regime Condition Class 1 and 2.	39,000 acres	37,000 acres	64,000 acres
1.4.2 Insects and Disease			
Within the dry upland forest PVG, treat stands with moderate to high susceptibility ratings using silvicultural treatments and/or wildland fire to decrease insect and disease susceptibility to low or moderate.	225,000 acres	155,000 acres	170,000 acres
Within the moist upland forest PVG, treat stands with moderate to high susceptibility ratings using silvicultural treatments and/or wildland fire to decrease insect and disease susceptibility to low or moderate.	25,000 acres	55,000 acres	35,000 acres
1.5 Invasive Species			
Reduce current infestations of invasive plant species.	1,500 acres	7,000 acres	7,000 acres
1.6 Structural Stages			
Decrease mid-age multi-story forest (UR stage) in the dry and moist upland forest PVGs by continuing to manage towards a large diameter (old forest) condition.	180,000 acres	175,000 acres	170,000 acres
Increase OFSS (open canopy) in the dry upland forest PVG by converting OFMS to OFSS (per decade).	16,000 acres	6,000 acres	5,000 acres

Objective Statements	Malheur	Umatilla	Wallowa-Whitman
1.7 Plant Species Composition			
Increase shade intolerant stands in the dry upland forest PVG (per decade).	225,000 acres	155,000 acres	170,000 acres
Manage rangeland vegetation to improve phases C and D to phase A or B.	7,000 acres	6,000 acres	10,000 acres
1.8 Stand Density			
Reduce the dry and moist upland forest PVGs that are in the closed stand density class (per decade).	220,000 acres	220,000 acres	220,000 acres
1.10 Soil Quality			
Implement erosion control and stabilization measures on unstable hillslopes. Possible activities include road realignment and improving forest vegetation conditions.	200-400 acres	200-400 acres	150-250 acres
Restore soil function (also see objectives for 1.1 Watershed Function).	175-350 acres	175-350 acres	75-150 acres
1.11 Water Quality			
Improve water quality through implementation of water quality restoration plans.	4-6 watersheds 160-240 stream miles	5-7 watersheds 200-280 stream miles	5-7 watersheds 200-280 stream miles
2.7 Roads and Trails Access			
Maintain the identified minimum road system needed for safe and efficient travel and for the protection, management, and use of NFS lands. Where open motor vehicle route density exceeds desired conditions, implement route closures and/or decommissioning or consider designating routes for other uses (refer to 1.1 Watershed Function for road decommissioning/obliteration objectives).	Identified minimum miles of road: 250 miles MLs 4/5 38 miles ML 3 1,025 miles ML 2	Identified minimum: 200 miles ML 4/5 200 miles ML 3 140 miles ML 2	Identified minimum: 90 miles MLs 4/5 170 miles ML 3 150 miles ML 2
3.3 Goods and Services			
Contribute to local economies by harvesting sawlogs and timber volume other than sawlogs (TSPQ annually).	56 MMBF	56 MMBF	50 MMBF
Contribute to local economies by providing forage for cattle and sheep.	123,500 AUMs (annually)	35,800 AUMs annually	80,500 AUMs (annually)

Annual Anticipated Accomplishments for each National Forest

The following table displays the anticipated accomplishments (related to the objectives) that are expected to take place annually as the Forest Service strives to achieve or maintain desired conditions. These anticipated accomplishments are not commitments or final decisions approving projects, nor are they targets or guarantees of future accomplishments. They are a means of measuring program progress toward achieving desired conditions. While the Forest Service will make every effort to achieve the following accomplishments, actual accomplishments may exceed or fall below these estimates, depending on yearly budgets and conditions at the time.

Table 27. Annual anticipated accomplishments related to objectives

Activity	MAL	UMA	WAW
Acres suitable for timber production (acres)	770,000	420,000	530,000
Predicted harvest level (MMBF)	56	56	50
Allowable sale quantity (MMBF)	55	51	46
Timber Harvest (includes the following two rows)			
Even-aged regeneration harvest (acres)	2,900	2,400	2,000
Uneven-aged and intermediate harvest (acres)	9,600	8,200	7,350
Total Timber Harvest	**12,500**	**10,600**	**9,350**
Planting (acres)	1,400	1,200	1,000
Precommercial thinning (acres)	1,400	1,600	2,600
Burning and mechanical treatment of fuels (acres)	22,000	20,600	19,850
Suppress invasive plants (acres)	1,500	4,000	3,500
Cattle and sheep grazing (AUMS)	123,500	35,800	80,500

* Split assumption for timber harvest is 90 percent ground-based logging system and 10 percent cable logging system.

Allowable Sale Quantity

One key decision of the forest plan is the identification of the allowable sale quantity of timber. The allowable sale quantity is the average annual amount of commercial timber that can be harvested from National Forest System lands that are suitable for timber production. Although the allowable sale quantity is identified as an average annual quantity, the amount produced in any one year may surpass the identified allowable sale quantity so long as the totals per decade are not exceeded. The allowable sale quantity is measured in million board feet (MMBF).

Table 28. Allowable sale quantity for each national forest

National Forest	MMBF
Malheur National Forest	55
Umatilla National Forest	51
Wallowa-Whitman National Forest	46

Monitoring and Evaluation Plan

There are three types of monitoring: implementation, effectiveness, and validation. Implementation monitoring determines if "we did what we said we would do." Effectiveness monitoring determines how well a particular practice helps achieve a project objective. The purpose of validation monitoring is to test key assumptions and generally involves designed research.

This monitoring and evaluation plan is designed primarily to assess whether or not forest plan implementation is making progress toward achieving desired conditions described by various forest plan goals, objectives, and standards and guidelines. Some desired conditions and goals will not be monitored. Some effectiveness monitoring is also in the monitoring plan.

Forest Service planning regulations also contain specific monitoring requirements that are incorporated into the monitoring and evaluation plan (36 CFR 219.12).

There are many other Forest Service monitoring programs designed to address specific questions. Those programs are not part of this monitoring plan.

Monitoring and evaluation are separate, sequential activities required by the National Forest Management Act (NFMA). Monitoring is the collection of data by observation or measurement. Evaluation is the analysis and interpretation of monitoring data. The results of monitoring and evaluation may lead to changes in forest plan management direction.

Monitoring the effects of climate change on the achievement of forest plan goals, objectives, and standards and guidelines within the life of a forest plan (10 to 15 years) is challenging. Due to the 10 to 20 year cycle of the Pacific Decadal Oscillation (PDO) and the overlapping 5 to 10 year cycle of the El Niño Southern Oscillation (ENSO) and their effects on climate, long-term data sets are needed to be able to detect differences due to climate change. Implicit in the evaluation phase of monitoring is that, where possible, the effects of climate both in the short term (PDO and ENSO) and in the long term would be incorporated into the evaluation.

Table 29 displays the monitoring plan framework for alternatives B, C, D, E, and F for each national forest.

Table 29. Monitoring plan framework for the action alternatives for each national forest

Proposed Monitoring Question	Proposed Indicator						Plan Component
	Parameter	Related Programs/ Indicators	Monitoring Frequency, Evaluation Frequency	Monitoring Type	Precision/ Reliability	Why? L: legal requirement S: strategic C: consultation	
1. Status of select watershed conditions. Key ecosystem characteristics related to water resources and watershed conditions, such as water quality, quantity, timing and distribution provide the basis for monitoring watershed conditions.							
What is the status and trend of water quality?	Miles of state-listed impaired waters	State 303d-list	5 years	Implementation	Moderate	L, S, C	1.11 Water Quality
What is the status and trend of stream temperature?	Stream temperature	NRIS-AqS temperature data, other agency databases, RMRS stream temperature models	Annual, 5 years	Implementation	Moderate	L, S, C	FOR-6 G-38
What is the status and trend of streamflows?	Streamflow	Federal and state agency databases and Forest Service databases	Annual, 10 years	Implementation	Moderate	S, C	1.1.1 Hydrologic Function
Are watershed/aquatics standards and guidelines and BMPs being implemented at project sites (e.g., range, roads, recreation, and vegetation management)?	Multiple	Project files, field observations	Annual, 5 years	Implementation	High	L, S, C	1.1 Watershed Function

Proposed Monitoring Question	Proposed Indicator						Plan Component
	Parameter	Related Programs/ Indicators	Monitoring Frequency, Evaluation Frequency	Monitoring Type	Precision/ Reliability	Why? L: legal requirement S: strategic C: consultation	
Are watershed/aquatics standards and guidelines and BMPs effective at achieving desired on-site conditions at project sites (e.g., range, roads, recreation, and vegetation management)?	Multiple	Field observations	Annual, 5 years	Effectiveness	Moderate	L, S, C	1.1 Watershed Function
What is the status and trend of watershed condition in all watersheds and in key watersheds?	Multiple watershed condition indicators and attributes	Forest Service and other agency databases	3-5 years	Implementation	Moderate	S, C	1.1 Watershed Function
What is the status and trend of riparian vegetation condition?	Grazing utilization on riparian vegetation, PIBO parameters	PIBO and forest datasets	Annual, 5 years	Implementation	Moderate	L,S, C	1.1.2 Riparian Function
What is the change in the distribution of known sites for selected aquatic and riparian invasive species?	Presence of selected invasive species	Federal and state agency databases and Forest Service databases	Annual, 5 years	Implementation	High	S, C	1.5 Invasive Species
What is the status and trend of aquatic habitat?	Miles of stream habitat improved, PIBO parameters	Forest Service databases, PIBO datasets	Annual, 5 years	Implementation	Moderate	L,S, C	1.1.6 Aquatic Habitat
What is the status and trend of aquatic habitat connectivity?	Miles of stream reconnected	Forest Service databases	Annual, 5 years	Implementation	High	L,S, C	1.1.6 Aquatic Habitat

Proposed Monitoring Question	Proposed Indicator						Plan Component
	Parameter	Related Programs/ Indicators	Monitoring Frequency, Evaluation Frequency	Monitoring Type	Precision/ Reliability	Why? L: legal requirement S: strategic C: consultation	
2. Status of select ecological conditions including key characteristics of terrestrial and aquatic ecosystems.							
Have lands been adequately restocked within five years of regeneration harvest?	Stocking	FACTS	5 years, 5 years	Implementation	High	L	FOR-4 S-14
Have lands that are not suitable for timber production become suitable?	Forest extent, congressional designations	CVS, GIS	5 years, 5 years	Implementation	Moderate	L	3.3.1 Forest Products
What is the maximum size opening from even-aged management?	Opening sizes	FACTS	5 years, 5 years	Implementation	Moderate	L	FOR-3 S-12
What are the trends in Fire Regime Condition Class?	Acres by FRCC	CVS/FIA vegetation databases, remote sensing	Annual, 5 years	Implementation	Moderate	S	1.4.1 Wildland Fire
What are the trends in high insect and disease hazard acres?	Spread of selected insects and diseases	Insects and disease surveys	Annual, 5 years	Effectiveness	Moderate	S	1.4.2 Insects and Disease
What are the trends in stand density?	Trees per acre by PVG	CVS (FIA)	5 years, 5 years	Implementation	High	S	1.8 Stand Density
What are the trends in stand density?	Acres of stand density reduction treatment	FACTS	Annual, 5 years	Implementation	High	S	1.8 Stand Density

Proposed Monitoring Question	Proposed Indicator						Plan Component
	Parameter	Related Programs/ Indicators	Monitoring Frequency, Evaluation Frequency	Monitoring Type	Precision/ Reliability	Why? L: legal requirement S: strategic C: consultation	
What are the trends in the introduction, establishment, and spread of invasive plants?	Acres infested/acres treated	FACTS	Annual, 5 years	Implementation, effectiveness	Moderate	L	1.5 Invasive Species
What are the trends in early seral tree species (ponderosa pine and western larch) composition?	Acres with desired species composition	CVS (FIA)	5 years, 5 years	Implementation, effectiveness	Moderate	S	1.7 Plant Species Composition
3. Status of select set of the ecological conditions required under §219.9 to contribute to the recovery of federally listed threatened and endangered species, conserve proposed and candidate species, and maintain a viable population of each species of conservation concern.							
What is the condition and trend in habitats for aquatic focal species (steelhead, spring Chinook salmon, bull trout, and redband trout	See Status and Trend-Aquatic habitat, Status and Trend-Aquatic Habitat Connectivity	Forest Service databases, PIBO datasets	Annual, 5 years	Implementation, Effectiveness	Moderate	L, S, C	1.2 Species Diversity
4. Status of focal species to assess the ecological conditions required under§ 219.9.							
What are the population trends and/or habitat trends of the management indicator species?	Pileated woodpeckers and white-headed woodpecker: follow regional protocol	See regional protocols	5 years, 5 years	Implementation, effectiveness	Moderate	L	1.2 Species Diversity
What are the population trends and/or habitat trends of the management indicator species?	Rocky Mountain elk (WAW and UMA only) and mule deer (MAL only)	State population data/open route density on winter range/FACTS	5 years, 5 years	Implementation, effectiveness	Moderate	L	1.2 Species Diversity

Proposed Monitoring Question	Proposed Indicator						Plan Component
	Parameter	Related Programs/ Indicators	Monitoring Frequency, Evaluation Frequency	Monitoring Type	Precision/ Reliability	Why? L: legal requirement S: strategic C: consultation	
What are the trends in source habitat and risk factors for boreal owl (UMA only), western bluebird, and fox sparrow?	Changes due to management or disturbance events	Accomplishment reports, FACTS, Fire GIS layer, open route density (boreal owl and western bluebird only)	2 years, 5 years	Implementation, effectiveness	Moderate	S	1.2 Species Diversity
What are the trends in source habitat and risk factors for Cassin's finch?	Changes due to management or disturbance events	Accomplishment reports, FACTS, Fire GIS layer	2 years, 2 years (5 years for alternatives B, C, and F, UMA only)	Implementation, effectiveness	Moderate	S	1.2 Species Diversity
What is the trend of northern goshawk (alternative C only)?	Follow established protocols			Implementation, effectiveness	Moderate	S	WLD-HAB-9
What are the trends in whitebark pine survival and recruitment?	Whitebark pine survival and recruitment	Whitebark pine transects and plots	5 years, 5 years	NA	Moderate	S	1.13 Special Habitats
5. Status of visitor use, visitor satisfaction, and progress toward meeting recreation objectives.							
Is recreation user satisfaction maintained or improved over time?	Visitor use	National Visitor Use Monitoring Data or similar national monitoring protocol	5 years	Effectiveness	High	S	2.3 Recreation

Proposed Monitoring Question	Proposed Indicator						Plan Component
	Parameter	Related Programs/ Indicators	Monitoring Frequency, Evaluation Frequency	Monitoring Type	Precision/ Reliability	Why? L: legal requirement S: strategic C: consultation	
Are recreation facilities properly maintained and meet all health, safety and accessibility requirements?	Recreation facility condition	National Visitor Use Monitoring Data or similar national monitoring protocol	5 years	Effectiveness	High	S	2.3 Recreation
6. Measurable changes on other plan area related to climate change and other stressors that may be affecting the plan area.							
Does new scientific information related to climate change indicate a need to change plan components?	New scientific findings	Best available scientific information	5 years	5 years	Low	S	1.2 Species Diversity, 2.11 Community Resiliency
7. Progress toward meeting the desired conditions and objectives in the plan, including for providing multiple use opportunities.							
Are watershed/aquatic restoration projects (e.g., road decommissioning, passage improvements, riparian stream habitat improvements, etc.) being implemented at a rate consistent with forest plan objectives?	Annual accomplishment metrics (e.g., road miles decommissioned)	Forest Service databases	Annual	Implementation	High	S, C	1.1 Watershed Function
Are structural stages trending towards the desired range of variation?	Structural stage distribution	CVS (FIA), FACTS, FSVeg Spatial	Annual, 5 years	Implementation, effectiveness	Moderate	S	1.6 Structural Stages
Are trends in percent of herblands and shrublands making progress towards achieving the desired condition?	CVS plots	CVS (FIA)	5 years, 5 years	Implementation, effectiveness	High	S	1.6 Structural Stages

Proposed Monitoring Question	Proposed Indicator						Plan Component
	Parameter	Related Programs/ Indicators	Monitoring Frequency, Evaluation Frequency	Monitoring Type	Precision/ Reliability	Why? L: legal requirement S: strategic C: consultation	
Are acres restored using wildfire consistent with levels expected in the forest plan (alternatives C, E, and F only)?	Acres of restoration from wildfire	FACTS	Annual, 5 years	Implementation	Moderate	S	1.4.1 Wildland Fire
Is the mix of wildfire severity and frequency within the range of variation shown in table 2?	Wildfire severity and frequency	Remote sensing data	Annual, 5 years	Implementation	Moderate	S	1.4.1 Wildland Fire
Is open route density less than or equal to the desired condition?	Open route density in watersheds by management area	GIS, INFRA, MVUM	Annual, 5 years	Implementation	High	S	2.7 Roads and Trails Access
8. The effects of each management system to determine that they do not substantially and permanently impact the productivity of the lands (16 U.S.C. 1604(g)(3)C). Focus on key ecosystem characteristics in the plan area related to soils and soil productivity identified in the assessment and planning process.							
Are outputs of goods and services being produced consistent with the levels expected in the forest plan?	Acres of fuels reduction treatments, CCF timber harvest, AUMs	FACTS, TIM	Annual, 5 years	Implementation	High	L	3.3 Goods and Services

Part 3 – Design Criteria

Introduction

Design criteria are used in combination with goals and desired conditions, objectives, and suitable uses to guide the management of the Malheur, Umatilla, and Wallowa-Whitman National Forests. Design criteria include both standards and guidelines. Standards and guidelines are sideboards that impose limitations on activities or uses for reasons of environmental protection, public safety, risk reduction, or to achieve desired conditions or goals and objectives. These standards and guidelines apply to all project decisions and implementations that will be made after the forest plan is approved.

Direction for managing National Forest System lands comes from a variety of sources, including the Code of Federal Regulations and the Forest Service Directive System, which consists of the Forest Service Manual and the Forest Service Handbook. Laws, regulations, and other agency policy and directives are generally not repeated in the forest plan and are not repeated in these standards and guidelines. For example, threatened and endangered species have very specific direction in law, regulation, policy, agency directives, and other sources, such as recovery plans. Therefore, standards and guidelines for threatened and endangered species are limited. If a particular resource is not addressed in these standards and guidelines, it does not mean the resource is not managed or that the Forest Service considers a particular resource less important than those listed.

None of the management direction contained in this plan is intended to prevent appropriate actions needed to protect human health and safety.

This part of the forest plan includes both forestwide and management area specific standards and guidelines. Forestwide design criteria applies to all management areas.

Standards are constraints placed upon project and activity decision making and are established to help achieve the goals and desired conditions and objectives of a plan or to comply with applicable laws, regulations, Executive orders, and directives. A standard is a requirement to be met in the design of projects and activities.

Guidelines provide design specifications for carrying out projects and activities to ensure that they are implemented in a manner that is compatible with desired conditions and goals and objectives.

Neither standards nor guidelines are commitments or final decisions approving projects and activities. Standards and guidelines do not compel or force action; they apply only when an action is being taken.

Forestwide Standards and Guidelines

Forestwide standards and guidelines are organized by resource or management action and generally apply to all three national forests. Where indicated, they apply only to the national forest(s) identified.

Each standard and guideline has an alpha-numeric identifier. The identifier used for the proposed action (S-1, G-11, etc.), where applicable, is included to facilitate comparison to the proposed action. In addition, the new identifiers match appendix A of the DEIS and are not sequential as a

result of including only those standards and guidelines proposed for the preferred alternative (Alternative E). New or modified standards and guidelines are also identified.

Species Diversity

Special Habitats

(standards and guidelines apply to all three national forests)

WLD-HAB-6
S-1

Standard

Activities that have potential to cause abandonment or destruction of known denning, nesting, or roosting sites of threatened, endangered, or sensitive species shall not be authorized or allowed within 1,200 feet of those sites.

WLD-HAB-10
G-11

Guideline

To the extent practical, known cavity or nest trees should be preserved when conducting prescribed (planned ignition) burning activities, mechanical fuel treatments, and silvicultural treatments.

WLD-HAB-12
S-7

Standard

Where mechanical treatment activities occur within dry or cool moist forest habitat, all snags 21 inches d.b.h. and greater and 50 percent of the snags from 12 to 21 inches d.b.h. shall be retained, except for the removal of danger/hazard trees. Snags shall be retained in patches.

WLD-HAB-13
G-16

Guideline

Motor vehicle use within elk winter range should not be authorized or allowed between December 1 and April 30.

WLD-HAB-14
New

Guideline

In greater sage-grouse habitat, developing new roads, motor vehicle trails, and artificial water impoundments should be avoided. During the breeding season, seasonal closure of open motor vehicle routes within 2 miles of known leks (protected activity centers) should be considered.

WLD-HAB-15
New

Guideline

Surface occupancy for mineral or fossil fuel exploration or extraction should not be authorized or allowed within 3 miles of occupied greater sage-grouse leks (protected activity centers).

WLD-HAB-16
New

Guideline

Power lines, communication towers, meteorological towers, and other tall structures should not be constructed within 2 miles of greater sage-grouse leks (protected activity centers).

WLD-HAB-17
New

Guideline

Construction of wind turbines should not be authorized or allowed within 3 miles of known greater sage-grouse leks (protected activity centers).

WLD-HAB-18
G-7

Guideline

Bat maternity and roost sites should not be disturbed.

Post-fire Habitat

(standards and guidelines apply to all three national forests)

WLD-HAB-19
G-4

Guideline

Greater than 50 percent of post-fire source habitat should be retained and should not be salvage logged, except in the wildland urban interface.

WLD-HAB-20
G-5
Changed to standard

Standard

Salvage logging shall not occur within burned source habitat areas less than 100 acres, except for the removal of danger/hazard trees.

WLD-HAB-21
G-6

Guideline

Where salvage logging occurs, all snags 21 inches d.b.h. and greater and 50 percent of the snags from 12 to 21 inches d.b.h. should be retained except for the removal of danger/hazard trees. Snags should be retained in patches.

WLD-HAB-22
New

Guideline

Following wildfires greater than 10 acres in greater sage-grouse habitat at high risk of annual grass invasions, seeding with an appropriate mixture should be accomplished to reduce the probability of cheatgrass establishment.

Riparian Habitat

(guidelines apply to all three national forests)

WLD-HAB-25
G-12

Guideline

Where management activities occur within riparian habitat, the quantity, stature, and health of shrubs should not be reduced or degraded.

WLD-HAB-26
G-14

Guideline

Roads and trails should not be constructed within high elevation riparian areas.

WLD-HAB-27
G-15

Guideline

Residual herbaceous vegetation within high elevation riparian areas should be maintained at a level adequate to prevent stream bank degradation.

Open Habitat

(guideline applies to all three national forests)

WLD-HAB-28
G-13

Guideline

Vigor and areal extent of seed producing grasses and forbs should not be reduced.

Plant Species (Federally Listed and Species at Risk)

Spalding's catch-fly (*Silene spaldingii*)

(standards apply only to the Umatilla and Wallowa-Whitman National Forests)

PL-TES-1
New

Standard

Livestock grazing shall not be authorized or allowed during the *Silene spaldingii* active growth period (generally between May 15 and August 30) in pastures that exhibit low departure from the desired condition, unless the grazing management history demonstrates that livestock avoid *Silene spaldingii* occupied habitat.

PL-TES-2
New

Standard

Livestock grazing shall not be authorized or allowed in pastures occupied by *Silene Spaldingii* that exhibit moderate or greater departure from desired condition.

Range Management and Domestic Livestock Grazing

(guidelines apply to all three national forests)

PL-TES-3
New

Guideline

Domestic livestock grazing should not be authorized or allowed in the fens/bogs sensitive plant habitat groups.

PL-TES-4
New

Guideline

Maximum forage utilization of key species should not exceed 30 percent in occupied habitat of threatened, endangered, and sensitive plant species, except where an approved conservation strategy, conservation agreement, or recovery plan approves an alternate use level.

PL-TES-5
New

Guideline

New water developments and salting should not be authorized or allowed within one-quarter mile of occupied habitat of threatened, endangered, or sensitive plant species.

Timber Harvest and Silviculture

(guideline applies to all three national forests)

PL-TES-6
New

Guideline

Timber harvest and associated vegetation activities should avoid the occupied habitat of threatened, endangered, and sensitive plant species (minimum 100 foot buffer), unless the silvicultural prescription will benefit the species or its habitat.

Wildland Fire Management Activities and Fuels Management

(guidelines apply to all three national forests)

PL-TES-7
New

Guideline

Slash piles and other fuels should be managed to avoid the occupied habitat of threatened, endangered, and sensitive plant species (minimum 100 foot buffer).

PL-TES-8
New

Guideline

Wildland fire (planned and unplanned ignitions) suppression lines should not be constructed within occupied habitat of threatened, endangered, and sensitive plant species.

Road Construction

(guideline applies to all three national forests)

PL-TES-9
New

Guideline

New road construction should be designed to avoid the occupied habitat of threatened, endangered, and sensitive plant species (minimum 25-foot buffer).

Recreation Management

(guideline applies to all three national forests)

PL-TES-10
New

Guideline

All new trail construction should be designed to avoid the occupied habitat of threatened, endangered, and sensitive plant species (minimum 25 foot buffer).

Minerals Management

(guideline applies to all three national forests)

PL-TES-11
New

Guideline

Mining operations should be authorized or allowed only if activities are planned to avoid threatened and endangered plant species. Sensitive plant species should be avoided to the greatest extent possible.

Lands

(guideline applies to all three national forests)

PL-TES-12
New

Guideline

Land exchanges should avoid the disposition of occupied habitat of threatened, endangered, and sensitive plant species.

Wildland Fire

(standards and guidelines apply to all three national forests)

FIRE-1
S-8

Standard

Safety shall be the top priority when conducting wildland fire (planned and unplanned ignitions) operations.

FIRE-2
G-27

Guideline

Minimum impact suppression tactics (MIST) should be utilized in sensitive areas, such as designated wilderness areas, designated wild and scenic river corridors, research natural areas, botanical areas, riparian management areas, cultural and historic sites, developed recreation areas, special use permit areas that have structures, and historic and recreational trails. MIST techniques should also be used for post fire restoration activities.

FIRE-3
G-28

Guideline

Mechanical fireline should not be constructed in areas with greater than 35 percent slope or on highly erodible soils unless potential adverse effects can be mitigated.

FIRE-4
New

Guideline

Greater sage-grouse habitat should be identified in fire management plans and should be given high priority for protection.

FIRE-5
New

Guideline

Prescribed fire should not be authorized or allowed within greater sage-grouse habitat unless the pre-burn assessment documents minimal risk of invasion by cheat grass or other invasive weeds.

Invasive Species (Aquatic and Terrestrial)

(standards apply to all three national forests)

NOX-1
S-9

Standard

Incorporates all of the standards in the 2005 Preventing and Managing Invasive Plants FEIS ROD (USDA Forest Service 2005). See "Management Direction for Invasive Species" in appendix A of the DEIS that accompanies this proposed forest plan.

NOX-2
G-29
Changed to standard

Standard

Materials used for construction or restoration projects on National Forest System lands shall be free of invasive species.

NOX-3
G-36
Changed to standard

Standard

All activities shall be conducted to minimize or prevent the potential spread or establishment of invasive species.

Timber Harvest and Silviculture

(standards and guidelines apply to all three national forests)

FOR-1
S-11

Standard

Clearcutting, shelterwood, and other even-aged regeneration harvest methods shall be used only when an interdisciplinary team/line officer has determined that protection can be assured for resources, such as soil, watershed, fish, wildlife, recreation, aesthetics, and the regeneration of the timber resource. It shall also be determined as the optimal harvest method.

FOR-2
S-12

Standard

Forest openings created by the application of even-aged regeneration harvest methods shall be limited to a maximum size of 40 acres. Exceptions are permitted on an individual basis after a 60-day public notice period and review by the regional forester. This maximum size opening limitation does not apply to areas harvested after large scale disturbances resulting from wildfire, insects, disease, windthrow, or other catastrophic events.

FOR-3
S-13

Standard

Cut blocks, patches, or strips created by the application of even-aged regeneration harvest methods shall be shaped and blended with the natural terrain.

FOR-4 S-14 **Standard**

Areas that are harvested using even-aged regeneration harvest methods on lands identified as suitable for timber production shall be capable of being adequately restocked within five years of final harvest. Adequately restocked is based on national forest or regional stocking standards.

FOR-5 G-37 **Standard**

Stands shall generally have reached the culmination of mean annual increment of growth as per NFMA sec.6 (m) prior to harvest. This does not preclude the use of thinning or other stand improvement measures or salvage or sanitation harvesting of timber stands that are substantially damaged by fire, windthrow, or other catastrophic event or that are in imminent danger of insect or disease outbreaks. Exceptions: after consideration of multiple uses, include other activities, such as cutting for experimental and research purposes, removing particular species of trees, improving wildlife habitat, range, or recreation resources.

FOR-6 G-38 **Guideline**

Silvicultural treatments should include provisions to avoid detrimental changes in water temperatures, blockages of water courses, and deposits of sediment.

FOR-7 G-39 **Guideline**

Timber harvest projects should include provisions for the maintenance or restoration of soil and water resources, including protection for streams, stream banks, shorelines, lakes, wetlands, and other bodies of water.

FOR-8 G-40 **Guideline**

Silvicultural treatments should be developed through interdisciplinary review that considers multiple use of the general area and ensures that the harvest systems used are not selected primarily because they give the greatest dollar return or the greatest unit output of timber.

FOR-9 G-41 **Guideline**

Timber harvest should not cause irreversible damage to soil, slope, or other watershed conditions.

FOR-10 G-42 **Guideline**

Timber harvest on lands not suitable for timber production should occur only to meet multiple-use purposes other than timber production.

Range Management and Domestic Livestock Grazing

(standards and guidelines apply to all three national forests)

RNG-1
G-43
Modified

Guideline

Grazing after wildland fire (planned and unplanned ignitions) should be managed so as not to cause a trend away from the key species desired condition. This may include growing season deferment for one or more years following wildland fire.

RNG-2
G-44

Guideline

New fences should be designed to accommodate wildlife movement. In greater sage-grouse habitat, fence construction within 1 mile of known leks and seasonal high use areas should not be authorized or allowed. Fence construction on the crest of low hills should not be authorized or allowed unless the fence is marked with anti-strike markers.

RNG-3
G-45

Guideline

All new water developments should provide for small mammal and bird escape.

RNG-4
G-46

Guideline

In areas classified as less than fully capable or suitable, only limited grazing should be authorized or allowed only after the limitations of the site are considered in designing the site-specific allotment management plan.

RNG-5
New

Guideline (for uplands)

Maximum percent utilization by management system

Utilization should be based on a point in time measurement. Utilization includes all use by permitted livestock, wildlife, insects, wildfire, or recreational use. Utilization will be based on height-weight curves and/or ocular estimates or other approved measures. Utilization is based on key species.

Low to moderate departure: phase A or B

Moderate or greater departure: phase C or D

(See MA 4B standards and guidelines for management direction for grazing within riparian management areas.)

	Maximum Percent Utilization	
	Departure from Desired Condition (guideline)	
Management System	**Low to Moderate**	**Moderate or Greater**
Season long	35%	30%
Management systems that incorporate deferment, rest, rotation	40%	35%

RNG-6
G-47

Guideline

Upland shrub utilization should not exceed 40 percent as determined by any science-based method.

RNG-7
New

Guideline

Grazing utilization within occupied greater sage-grouse habitats should not exceed 40 percent at any time during the grazing season and will be determined specifically for each greater sage-grouse habitat, i.e., grazing utilization measured as an average of the entire pasture or grazing unit will not be used to determine compliance with this guideline.

RNG-8
New

Guideline

During greater sage-grouse breeding season, livestock turnout and trailing should avoid concentration on known greater sage-grouse leks (protected activity centers).

Bighorn Sheep

(standards and guidelines apply to all three national forests)

RNG-9
S-2

Standard

Domestic sheep or goat grazing shall not be authorized or allowed on lands where effective separation from bighorn sheep cannot be reasonably maintained.

RNG-10
S-3

Standard

The use of domestic goats or sheep for manipulation of vegetation (i.e., noxious weed control, fuels reduction) shall not be authorized or allowed within or adjacent to source habitat for bighorn sheep.

RNG-11
S-4

Standard

The use of recreational pack goats shall not be authorized or allowed within or adjacent to source habitat for bighorn sheep.

RNG-12
New

Standard

An effective monitoring program shall be in place to detect presence of bighorn sheep in identified high-risk areas when authorized domestic sheep or goats are present on adjacent or nearby allotments.

RNG-13
New

Guideline

Trailing of domestic sheep or goats should not be authorized or allowed within 7 miles of bighorn sheep home ranges.

RNG-14
New

Standard

When effective monitoring has not been conducted for bighorn sheep presence, domestic sheep or goat grazing shall not be authorized.

RNG-15
New

Standard

Permitted domestic sheep and goats shall be counted onto and off of the allotment by the permittee. A reasonable effort to account for the disposition of any missing sheep must be made by the permittee.

RNG-16
New

Standard

When permitted sheep are found to be missing, the Forest Service shall be notified within 24 hours.

RNG-17
New

Standard

Authorized domestic sheep or goats shall be individually marked in a manner that allows immediate identification of ownership at a distance during the grazing season at all times while on NFS lands.

RNG-18
New

Standard

Implement emergency actions when bighorn sheep presence is detected within 7 miles of active domestic sheep or goat grazing or trailing. Actions to be taken shall ensure separation between bighorn sheep and domestic sheep or goats.

RNG-19
New

Guideline

To maintain separation, when bighorn sheep are found within 7 miles of an active domestic sheep and goat allotment, implementation of emergency actions for domestic sheep and goat grazing could include:

Reroute (move) domestic sheep or goats to a new routing path that will take them away from the likely bighorn movement; this may involve rerouting within the permitted allotment, movement to a different allotment, or, if the situation cannot otherwise be resolved, moving the permitted sheep off of the national forest until the situation can be resolved

Inform the appropriate state agency of the bighorn sheep location

Scenery

(guideline applies to all three national forests)

SCEN-1
G-49

Guideline

Short-term reductions to existing scenic integrity levels should be authorized only when needed to achieve the long-term restoration or rehabilitation of scenic integrity and/or scenic stability.

Cultural Resources

(guideline applies to all three national forests)

CUL-1
G-50

Guideline

Prehistoric, historic, and traditional cultural properties should be protected unless an exemption is specified in a programmatic agreement or a project specific mitigation plan is developed in consultation with the appropriate State Historic Preservation Officer.

Key Watersheds

(standards apply to all three national forests)

KW-1
S-15

Standard

There shall be no net increase in the mileage of Forest Roads in any key watershed unless the increase results in a reduction in road-related risk to watershed condition. Priority should be given to roads that pose the greatest relative ecological risks to riparian and aquatic ecosystems.

KW-2
S-16

Standard

Hydroelectric and other surface water development authorizations shall include requirements for in-stream flows and habitat conditions that maintain or restore native fish and other desired aquatic species populations, riparian dependent resources, favorable channel conditions, and aquatic connectivity.

KW-3
S-17

Standard

New hydroelectric facilities and water developments shall not be located in a key watershed unless it can be demonstrated that there are minimal risks and/or no adverse effects to the fish and water resources for which the key watershed was established.

Watershed Restoration

(guidelines apply to all three national forests)

WR-1
G-57

Guideline

Watershed restoration projects should be designed to maximize the use of natural ecological processes as a tool in meeting and maintaining restoration objectives.

WR-2
G-58

Guideline

Watershed restoration projects should be designed to minimize the need for long-term maintenance.

WR-3
New

Guideline

Hydrologic connectivity and sediment delivery from roads and trails should be minimized. This includes roads inside and outside of riparian management areas (RMAs).

Individual Old Trees

(guidelines apply to all three national forests)

OF-1
G-59

Guideline

Management activities within and outside old forest stands should generally emphasize retaining live trees with certain old tree characteristics. For most tree species, old trees are generally considered to be greater than 150 years in age. However, tree characteristics and old age may vary by species and site. A description of these characteristics and age should be further developed on a site-specific project basis.

OF-2
New

Guideline

New motor vehicle routes should not be constructed within old forest stands.

Management Area Standards and Guidelines

The following standards and guidelines are organized by management area first and then by resource or management activity and apply only to the associated management area. Standards and guidelines generally apply to all three national forests. Where indicated, they apply only to the national forest(s) identified.

Each standard and guideline has an alpha-numeric identifier. The identifier used for the proposed action (S-19, G-61, etc.), where applicable, is included to facilitate comparison to the proposed action. In addition, the new identifiers match appendix A of the DEIS and are not sequential as a result of including only those standards and guidelines proposed for the preferred alternative (Alternative E). New or modified standards and guidelines are also identified.

MA 1A Congressionally Designated Wilderness Areas

(standards and guidelines apply to all three national forests)

MA 1A
WIL-1
S-19

Standard

With the exception of permitted livestock, animals other than pack stock and pets (see glossary) shall not be authorized or allowed in wilderness areas.

MA 1A
WIL-2
S-28

Standard

Wheeled vehicles, such as wagons and game carts, shall not be authorized or allowed within wilderness areas.

MA 1A
WIL-3
G-61

Guideline

New proposals for outfitter and guide special use permits or recreation event permits should be approved only when the special use or event is consistent with wilderness area desired conditions and a need is identified by a needs assessment and capacity analysis.

MA 1A
WIL-4
G-63

Guideline

Party sizes greater than 12 people and/or 18 head of stock should not be authorized or allowed within wilderness areas.

MA 1A
WIL-5
G-64

Guideline

The hitching or tethering of a horse or other saddle or pack animal should not be authorized or allowed within 200 feet of lakes or within 100 feet of streams and posted wetlands within wilderness areas.

MA 1A
WIL-6
S-29

Standard

Hitching or tethering of horses or other saddle or pack animals to trees, except for loading or unloading, shall not be authorized or allowed at campsites within wilderness areas.

MA 1A Congressionally Designated Wilderness Areas within the Malheur National Forest

MA 1A MAL-WIL-1 S-25 **Standard**

Storing or abandoning personal property, equipment, and supplies for more than 72 hours shall not be authorized or allowed in the Strawberry Mountain Wilderness Area.

MA 1A MAL-WIL-2 G-62 **Guideline**

Camping and campfires should not be authorized or allowed within 200 feet of lakes, streams, or other camps within wilderness areas.

MA 1A Congressionally Designated Wilderness Areas within the Umatilla National Forest

MA 1A UMA-WIL-2 G-62 **Guideline**

Camping and campfires should not be authorized or allowed within 200 feet of lakes, streams, or other camps within wilderness areas.

MA 1A Congressionally Designated Wilderness Areas within the Wallowa-Whitman National Forest

MA 1A WAW-WIL-1 S-20 **Standard**

Eagle Cap Wilderness Area visitors shall not be authorized unless they obtain and possess an entry permit.

MA 1A WAW-WIL-2 S-21 **Standard**

Campfires shall not be authorized or allowed within 100 feet of any lake or posted wetland in the Eagle Cap Wilderness Area.

MA 1A WAW-WIL-3 S-22 **Standard**

Campfires shall not be authorized or allowed within one-quarter mile of the following lakes in the Eagle Cap Wilderness Area: Bear Lake (Bear Creek Area), Blue Lake, Chimney Lake, Dollar Lake, Eagle Lake, Frazier Lake, Little Frazier Lake, Glacier Lake, Hobo Lake, Ice Lake, Jewett Lake, Laverty Lake, Maxwell Lake, Mirror Lake, Moccasin Lake, Prospect Lake, Steamboat Lake, Sunshine Lake, Swamp Lake, Tombstone Lake, Traverse Lake, and Upper Lake.

MA 1A WAW-WIL-4 S-23 **Standard**

Grazing of horses and other saddle and pack animals shall not be authorized or allowed within 200 feet of any lake in the Eagle Cap Wilderness Area.

MA 1A WAW-WIL-5 S-24 **Standard**

Eagle Cap Wilderness Area visitors shall not be authorized or allowed to enter posted restoration sites.

MA 1A
WAW-WIL-6
S-25

Standard

Storing or abandoning personal property, equipment, and supplies for more than 72 hours shall not be authorized or allowed in the Eagle Cap Wilderness Area.

MA 1A
WAW-WIL-7
S-26

Standard

Party sizes greater than 12 people and/or 18 head of stock shall not be authorized or allowed in the Eagle Cap Wilderness Area.

MA 1A
WAW-WIL-8
S-27

Standard

When camping, party sizes greater than 6 people and/or 9 head of stock shall not be authorized or allowed in the Lakes Basin Management Area of the Eagle Cap Wilderness Area.

Wildland Fire Management Activities within MA 1A

(standards and guidelines apply to all three national forests)

MA 1A
WIL-FIRE-1
G-65

Guideline

All firelines should be restored by actions such as scattering slash piles along and onto firelines, knocking down or burning all slash piles greater than 18 inches tall, pulling back and covering all sod with slash, and placing boulders, logs, and slash on firelines to discourage use and camouflage entrance points.

Additionally, all firelines that are within 100 feet of intercepting trails, roads, or stream crossings should be restored by cutting stumps flush and close to the ground (height of 4 to 5 inches), covering tops with a layer of soil (1 to 2 inches), and chopping and roughening the ends of logs and stumps.

MA 1A
WIL-FIRE-2
G-66

Guideline

Waterbars should be constructed on fireline slopes that exceed 10 percent.

MA 1A
WIL-FIRE-3
G-67

Guideline

Garbage and trash should be removed.

MA 1A
WIL-FIRE-4
G-68

Guideline

Camps should be restored by replacing logs and rocks, recontouring terrain, scarifying soil, and scattering twigs, rocks, and dead branches to discourage use and camouflage entrance points.

MA 1A
WIL-FIRE-5
G-69

Guideline

Closed roads that were opened to provide access to wilderness areas should be closed after the use has concluded.

MA 1A
WIL-FIRE-6
G-70

Guideline

Wilderness trails used as firelines should be returned to original condition after the use has concluded.

MA 1B Recommended Wilderness Areas and MA 1C Wilderness Study Areas

(guideline applies to all three national forests)

MA 1B/C WIL-ST-1 G-71

Guideline

Existing and proposed uses that could compromise wilderness area eligibility prior to congressional designation should not be authorized.

MA 2A Wild and Scenic Rivers (Includes Designated, Eligible, and Suitable Rivers)

(standards and guidelines apply to all three national forests)

MA 2A WSR-1 G-72

Guideline

New proposals for outfitting and guiding special use permits or recreation event permits should be approved only when the special use or event is consistent with Outstandingly Remarkable Values (ORVs), wild and scenic rivers desired conditions, and when a need is identified by a Needs Assessment and Capacity Analysis.

MA 2A WSR-2 S-30

Standard

Hitching or tethering of horses or other saddle or pack animals to trees, except for loading or unloading, shall not be authorized or allowed at campsites within wild and scenic river corridors.

MA 2A WSR-3 G-73

Guideline

Hitching, tethering, hobbling, and confining of saddle and pack animals within wild and scenic river corridors should be authorized or allowed only in designated stock facilities or at hardened campsites.

MA 2A WSR-4 G-74

Guideline

New designated routes and trails should not be constructed within riparian management areas unless no other feasible alternative exists.

MA 2A WSR-5 G-75

Guideline

Recreation livestock should be allowed or authorized only in designated areas.

MA 2A WSR-6 G-76

Guideline

Timber harvest roads should not be constructed within wild and scenic river corridors.

MA 2A WSR-7 G-77

Guideline

Firewood collection (except for use at onsite campfires) should be allowed only at designated sites within wild and scenic river corridors, preferably not within riparian management areas.

MA 2A WSR-8 G-78	**Guideline** The construction of roads and river crossings that are visible from the river corridor of wild and scenic sections should not be authorized or allowed except when necessary to meet recreation purposes.
MA 2A WSR-9 S-34	**Standard** Hazard trees shall be felled and left where they fall or moved to a desirable location within the wild and scenic river corridor.
MA 2A WSR-10 S-35	**Standard** Mining of common minerals shall not be authorized.
MA 2A WSR-11 S-36	**Standard** Oil and gas leasing shall not be authorized or allowed within 1,320 feet of the high water mark in wild river corridors.

MA 2A Wild and Scenic Rivers within the Malheur National Forest (includes designated and eligible rivers)

MA 2A MAL-WSR-1 S-37	**Standard** Motor vehicle use shall not be authorized or allowed on trail 303 within the Malheur Wild and Scenic River corridor and on trail 381 within the North Fork Malheur Wild and Scenic River corridor.
MA 2A MAL-WSR-2 S-38	**Standard** Livestock grazing shall not be authorized between Crane Creek and the southern boundary of the Malheur National Forest between July 1 and September 15.

MA 2A Wild and Scenic Rivers within the Umatilla National Forest

There are no standards and guidelines specific to the Umatilla National Forest. The general WSR standards and guidelines displayed previously apply.

MA 2A Wild and Scenic Rivers within the Wallowa-Whitman National Forest (designated and suitable rivers)

MA 2A WAW-WSR-1 S-32	**Standard** Camping shall not be authorized or allowed in the Lostine River corridor except in campgrounds, at trailheads, and in designated campsites.
MA 2A WAW-WSR-2 S-33	**Standard** With the exception of trailheads and other designated areas, hitching, tethering, hobbling, and confining of saddle and pack animals shall not be authorized or allowed within the Lostine River corridor.

MA 2B Research Natural Areas

(standards and guidelines apply to all three national forests)

MA 2B RNA-1 *New*	**Standard** Management activities that directly or indirectly modify the integrity of the ecological processes shall not be authorized or allowed.
MA 2B RNA-2 G-86 *Changed to standard*	**Standard** Mineral exploration and development activities shall be managed to minimize impacts to research natural areas.
MA 2B RNA-3 G-87 *Changed to standard*	**Standard** Removal of common mineral material shall not be authorized or allowed within research natural areas.

MA 2C Botanical Areas

(guidelines apply to the Umatilla and Malheur National Forests)

MA 2C BOT-1 G-91	**Guideline** Visitor activities should be managed to avoid degradation to botanical areas.
MA 2C BOT-2 G-92	**Guideline** Interpretive facilities should not conflict with the overall purpose of establishing botanical areas.
MA 2C BOT-3 G-93	**Guideline** Silvicultural treatments should be allowed only when designed to enhance the special features of botanical areas.
MA 2C BOT-4 G-94	**Guideline** Firewood collection should not be authorized or allowed within botanical areas.
MA 2C BOT-5 G-95	**Guideline** Mineral exploration and development activities should be managed to minimize impacts to botanical areas.
MA 2C BOT-6 G-96	**Guideline** Removal of common mineral material should not be authorized or allowed within botanical areas.

MA 2C BOT-7 G-97

Guideline

Botanical areas should be managed as avoidance areas for utility corridors.

MA 2C BOT-8 G-98

Guideline

Planned fire should be used to maintain or enhance the vegetation condition for which the botanical area was established.

MA 2C BOT-9 G-99

Guideline

Endemic (normal) levels of insects and disease disturbance should be allowed within botanical areas.

MA 2C BOT-10 G-100

Guideline

Invasive species should be reduced or eradicated within botanical areas.

MA 2I Starkey Experimental Forest and Range

(standards apply to Wallowa-Whitman National Forest)

MA 2I STA EXP-1 *New*

Guideline

To protect valuable infrastructure and assure compatibility with research needs and objectives, natural, unplanned ignitions should be suppressed with a high level of management response. Suppression activities are coordinated with the Station director, research project leader, or designee.

MA 2I STA EXP-2 *New*

Guideline

Planned ignitions should occur when/where compatible with research needs or objectives.

MA 2I STA EXP-3 *New*

Standard

Special forest product collection and firewood cutting shall only be allowed when/where compatible with research objectives.

MA 2I STA EXP-4 *New*

Standard

Vehicle access shall only be allowed on designated routes, unless necessary to meet research needs or objectives.

MA 2I STA EXP-5 *New*

Standard

Starkey Experimental Forest and Range shall be closed to public access from fall until spring to protect deer and elk from harassment and stress during winter, with specific dates established periodically as consistent with research objectives.

MA 2I
STA EXP-6
New

Guideline

Existing old forest stands should be retained and additional stands that are the closest to old forest structure should be retained at a rate of 20 percent of the land area.

MA 2I
STA EXP-7
New

Standard

Plans of operation for existing locatable mineral claims shall be reviewed and modified, to the extent practicable, to be compatible with existing or planned research.

MA 2J Municipal Watersheds

(standards apply to all three national forests)

MA 2J
MUN-WAT-1
S-39

Standard

All management activities shall be designed to protect water quality at the intake in public water supply watersheds.

MA 2J
MUN-WAT-2
S-40

Standard

Fertilizers and chemicals shall only be used in emergency situations, subject to the terms of existing agreements between individual cities and the U.S. Department of Agriculture.

MA 3A Backcountry (nonmotorized use) and MA 3B Backcountry (motorized use)

(standards apply to all three national forests)

MA 3A/B
BACK-1
S-58

Standard

Silvicultural treatments shall generally be limited to small diameter material and may take place only for the following reasons:

To improve habitat for species with viability concerns, restore terrestrial or aquatic ecosystem composition and structural characteristics, or to maintain existing unique or important wildlife features or plant communities

Appropriate administrative use

When cutting, sale, or removal of timber is incidental to the implementation of another suitable management activity

MA 3A/B
BACK-2
S-59

Standard

New road construction shall be limited to that required for designated special uses or required by law to provide access to non-Federal land or valid existing rights.

MA 4B Riparian Management Areas

General Management within MA 4B

(standards and guidelines apply to all three national forests)

MA 4B RMA-1 G-101

Guideline

When riparian management areas are functioning properly, project activities should be designed to maintain those conditions.

When riparian management areas are not properly functioning, project activities should be designed to improve those conditions.

Project activities in riparian management areas should not result in long-term degradation to aquatic and riparian conditions at the watershed scale. Limited short term or site-scale effects from activities in riparian management areas may be acceptable when they support, or do not diminish, long-term benefits to aquatic and riparian resources.

MA 4B RMA-2 S-41

Standard

Herbicides, insecticides, pesticides and other toxicants, and other chemicals shall be applied only to maintain, protect, or enhance aquatic and riparian resources or to restore native plant communities.

MA 4B RMA-3 G-102

Guideline

Generally trees needed to maintain, protect, or enhance aquatic and riparian resources that are felled for safety should be felled and left on site.

MA 4B RMA-4 G-103

Guideline

Water drafting sites should be located and managed to minimize adverse effects on stream channel stability, sedimentation, and in-stream flows needed to maintain riparian resources, channel conditions, and fish habitat.

MA 4B RMA-5 S-42

Standard

Pumps shall be screened at drafting sites to prevent entrainment of fish and shall have one-way valves to prevent back-flow into streams.

MA 4B RMA-6 G-125

Guideline

Fish habitat and water quality should be protected when withdrawing water for administrative purposes.

Wildland Fire Management Activities and Fuels Management within MA 4B

(standards and guidelines apply to all three national forests)

MA 4B RMA-FIRE-1 G-104

Guideline

Disturbed areas, such as firelines, drop-points, camps, roads, and trails, should be restored by actions such as scattering slash piles, replacing logs and boulders, scarifying soils, recontouring terrain, and reseeding with native species.

MA 4B RMA-FIRE-2 G-105	**Guideline** Chemicals and retardant should not be used for suppression and mop-up within riparian areas.
MA 4B RMA-FIRE-3 G-106	**Guideline** Pumping directly from a stream channel should be avoided if chemical products are to be injected directly into the system. When chemicals are used, pumping should be conducted from a fold-a-tank that is located outside the riparian area.
MA 4B RMA-FIRE-4 G-107	**Guideline** Pumps and charged hoses should not be back flushed into live water.
MA 4B RMA-FIRE-5 G-108	**Guideline** Temporary firefighting facilities (e.g., incident bases, camps, helibases, staging areas, helispots, and other centers) for incident activities should be located outside riparian management areas. When no practical alternative exists, all appropriate measures to maintain, restore, or enhance aquatic and riparian dependent resources should be used. (See guideline MA 4B RMA-FIRE-1.)
MA 4B RMA-FIRE-6 G-109	**Guideline** Aerial application of chemical retardant, foam, or other firefighting chemicals and petroleum should be avoided within 300 feet of waterways.
MA 4B RMA-FIRE-7 G-110	**Guideline** Water drafting sites should be located and managed to minimize adverse effects on stream channel stability, sedimentation, and in-stream flows needed to maintain riparian resources, channel conditions, and fish habitat.
MA 4B RMA-FIRE-8 S-44	**Standard** Portable pump set-ups shall include containment provisions for fuel spills and fuel containers shall have appropriate containment provisions. Vehicles should be parked in locations that avoid entry of spilled fuel into streams.
MA 4B RMA-FIRE-9 G-111	**Guideline** Generally firelines should be located and configured to minimize sediment delivery, creation of new stream channels, and unauthorized roads and trails.
MA 4B RMA-FIRE-10 S-45	**Standard** Minimum Impact Suppression Tactics (NWCG 2006) techniques for wildfire suppression activities shall be used in riparian management areas.

MA 4B RMA-FIRE-11 S-46	**Standard** To minimize soil damage when chipping fuels within riparian management areas, chip bed depths on dry soils shall be limited to 7.5 cm or less (Busse et al. 2005).

Timber Management and Silviculture within MA 4B

(standards and guidelines apply to all three national forests)

MA 4B RMA-FOR-1 G-112	**Guideline** Silvicultural treatments should occur in riparian management areas only as necessary to maintain, restore or enhance conditions that are needed to support aquatic and riparian dependent resources.
MA 4B RMA-FOR-2 S-47	**Standard** Firewood collection shall not be authorized or allowed in the active floodplain or within primary source areas for large woody debris. Active floodplain is the area bordering a stream that is inundated by flows at a surface elevation defined by two-times the maximum bankfull depth (i.e., bankfull depth measured at thalweg).
MA 4B RMA-FOR-3 G-113	**Guideline** New landings, designated skid trails, staging or decking should not occur in riparian management areas, unless there are no reasonable alternatives, in which case they should: • Be of minimum size • Be located outside the active floodplain • Minimize effects to large wood, bank integrity, temperature, and sediment levels
MA 4B RMA-FOR-4 G-114	**Guideline** Yarding activities should achieve full suspension over the active channel. Active channel is the bankfull width of flowing perennial or intermittent streams.

Range Management and Domestic Livestock Grazing within MA 4B

(standards and guidelines apply to all three national forests)

MA 4B RMA-RNG-1 S-48	**Standard** New livestock handling and/or management facilities shall be located outside riparian management areas, except for those that inherently must be located in a riparian management area and those needed for resource protection.

MA 4B RMA-RNG-2 G-115 **Guideline**

The following displays the maximum utilization guidelines for riparian management areas.

Measure	Maximum utilization within riparian management areas*
Maximum percent utilization of woody vegetation (percent of mean annual vegetative production)	25% in bull trout spawning and rearing habitat (all three national forests) 35% in anadromous fish reaches (UMA and WAW) 40% outside bull trout spawning and rearing habitat (MAL) 40% outside anadromous fish reaches (UMA and WAW)
Maximum percent utilization of herbaceous vegetation(percent of mean annual vegetative production)	25% in bull trout spawning and rearing habitat (all three national forests) 35% in anadromous fish reaches (UMA and WAW) 40% outside bull trout spawning and rearing habitat (MAL) 40% outside anadromous fish reaches (UMA and WAW)
* In addition, the minimum residual stubble height applies at the greenline (4 to 6 inches). The maximum bank alteration is 20 percent.	

MA 4B RMA-RNG-3 G-116 **Guideline**

During allotment management planning, removing existing livestock handling or management facilities from riparian management areas should be considered.

MA 4B RMA-RNG-4 G-117 **Guideline**

Livestock trailing, bedding, watering, loading, and other handling in riparian management areas should be minimized.

MA 4B RMA-RNG-5 G-118 **Standard**

Trampling of federally listed threatened or endangered fish redds by livestock shall be avoided.

Roads Management within MA 4B

(standards and guidelines apply to all three national forests)

MA 4B RMA-RD-1 S-49 **Standard**

Side-casting (placement of unconsolidated earthen waste materials resulting from road construction or maintenance) in riparian management areas shall be avoided.

MA 4B RMA-RD-2 S-50 **Standard**

Fill material shall not be placed on organic debris in riparian management areas.

MA 4B RMA-RD-3 S-51 **Standard**

Disruption of natural hydrologic flow paths, including diversion of streamflow and interception of surface and subsurface flow shall be minimized or avoided when constructing or reconstructing roads or landings either inside or outside of riparian management areas.

MA 4B RMA-RD-4 G-120

Guideline

Wetlands and unstable areas should be avoided when reconstructing existing roads or constructing new roads and landings. Minimize impacts where avoidance is not practical.

MA 4B RMA-RD-5 S-52

Standard

New or replaced permanent stream crossings shall accommodate flows at least 20 percent greater than the 100-year flood event, including associated bedload and debris.

MA 4B RMA-RD-6 S-53

Standard

Where physically feasible, construction or reconstruction of stream crossings shall avoid diversion of streamflow out of the channel and down the road in the event of crossing failure.

MA 4B RMA-RD-7 S-54

Standard

In fish bearing streams, construction or reconstruction of stream crossings shall provide and maintain passage for all fish species and all life stages of fish.

MA 4B RMA-RD-8 G-121

Guideline

Construction or reconstruction of stream crossings should allow passage for other riparian dependent species where connectivity has been identified as an issue.

MA 4B RMA-RD-9 G-122

Guideline

Fish passage barriers should be retained where they serve to restrict access by undesirable nonnative species and are consistent with restoration of habitat for native species.

MA 4B RMA-RD-10 G-123

Guideline

Hydrologic connectivity and sediment delivery from roads should be minimized. This includes roads inside and outside of riparian management areas.

MA 4B RMA-RD-11 G-124

Guideline

Road drainage should be routed away from potentially unstable channels, fills, and hillslopes. This applies both inside and outside of riparian management areas.

Recreation Management within MA 4B

(standards and guidelines apply to all three national forests)

MA 4B RMA-REC-1 G-126	**Guideline** Generally placing new facilities or infrastructure within expected long-term channel migration zones should be avoided. Where activities, such as the placement or construction of road-stream crossings, boat ramps, docks, and interpretive trails, inherently must occur in riparian management areas, locate them to minimize impacts on riparian dependent resource conditions (e.g., within geologically stable areas, avoiding major spawning sites).
MA 4B RMA-REC-2 G-127	**Guideline** Removing or relocating existing recreation facilities that are causing unacceptable impacts in riparian management areas should be considered.

Minerals Management within MA 4B

(standards and guidelines apply to all three national forests)

MA 4B RMA-MIN-1 G-128	**Guideline** Adverse effects to aquatic and other riparian-dependent resources from mineral operations should be minimized or avoided. For operations in riparian management areas, ensure operators take all practicable measures to maintain, protect, and rehabilitate water quality and habitat for fish and wildlife and other riparian dependent resources that may be affected by the operations.
MA 4B RMA-MIN-2 G-129	**Guideline** Structures, support facilities, and roads should be located outside riparian management areas. Where no alternative to siting facilities in riparian management areas exists, locate them in a way to minimize adverse effects to aquatic and other riparian dependent resources. Existing roads should be maintained to minimize damage to aquatic and riparian dependent resources.
MA 4B RMA-MIN-3 S-55	**Standard** Mine waste facilities with the potential to generate hazardous material (per CERCLA) shall be located outside of riparian management areas. If no reasonable alternative to locating these facilities in riparian management areas exists, then locate and design the waste facilities using the best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials.
MA 4B RMA-MIN-4 G-130	**Guideline** Where possible, the operating plans for existing activities should be adjusted to minimize adverse effects to aquatic and riparian dependent resources in the riparian management areas.

Lands Ownership (Hydropower) within MA 4B

(standards and guidelines apply to all three national forests)

MA 4B RMA-HYD-1 S-56	**Standard** Authorizations for all new and existing special uses, including, but not limited to water diversion or transmission facilities (e.g., pipelines and ditches), energy transmission lines, roads, hydroelectric, and other surface water development proposals, shall result in the reestablishment, restoration, or mitigation of habitat conditions and ecological processes identified as being essential for the maintenance or improvement of habitat conditions for fish, water and other riparian dependent species and resources. These processes include in-stream flow regimes, physical and biological connectivity, water quality, and integrity and complexity of riparian and aquatic habitat.
MA 4B RMA-HYD-2 S-57	**Standard** New support facilities shall be located outside of riparian management areas. Support facilities include any facilities or improvements (e.g., workshops, housing, switchyards, staging areas, and transmission lines) not directly integral to the production of hydroelectric power or necessary for the implementation of prescribed protection, mitigation or enhancement measures.
MA 4B RMA-HYD-3 G-131	**Guideline** If existing support facilities are located within the riparian management areas, they should be operated and maintained to restore or enhance aquatic and riparian dependent resources. At time of permit reissuance, consider removing support facilities, where practical.

The following management areas do not have specific standards or guidelines:

- MA 2D Geological Areas
- MA 2E Historical Areas
- MA 2F Scenic Byways and All-American Roads
- MA 2G Nationally Designated Trails
- MA 2H Scenic Areas
- MA 3C Wildlife Corridor
- MA 4A General Forest
- MA 5 Developed Sites and Administrative Areas

Summary of the Analysis of the Management Situation

Introduction

This section summarizes the analysis of the management situation (AMS) produced in 2005 for the Malheur, Umatilla, Wallowa-Whitman National Forests, including the portion of the Ochoco National Forest administered by the Malheur, collectively referred to as the Blue Mountains national forests. The development of an AMS is a requirement of the forest plan revision process (36CFR sec. 219.12(c)). The AMS provides a determination of the ability of the planning area to supply goods and services in response to society's demands. The primary purpose of this analysis is to provide a basis for formulating a broad range of reasonable alternatives. Required elements of the AMS include:

- Benchmark analysis (defines the range within the alternatives can be constructed)
- The current level of goods and services provided by the unit
- Projections of demand for goods and services
- Determination of the potential to resolve public issues and management concerns
- Determination of the need to establish or change management direction

Benchmark Analysis

The development of benchmarks is required as a provision of 1982 Planning Rule, sec 219.12 (e.1). During the need for change evaluation, all benchmarks were reviewed and evaluated. The nontimber benchmarks, including wildlife, wilderness areas, and range, were determined to be appropriate and reasonable, therefore no new ones were developed. Following the need for change evaluation, five new timber benchmarks were developed:

1. Minimum level (219.12 (e)(1)(i))
2. Maximum biological potential (219.12 (e)(1)(ii)) with departure from the base schedule

    2a. Maximum biological potential (219.2 (e)(1)(ii)) meeting the base schedule Maximum PNV (219.12 (e)(1)(iii) C) with departure from the base schedule

    3a. Maximum PNV (219.12 (e)(1)(iii) C) meeting the base schedule

Summary of Projected Timber Benchmark Annual Outputs (millions of board feet)

The projected timber outputs in table 30 are based on the initial forest plan revision acres identified as suitable for timber production (this may change during revision). Benchmarks 2 and 2a would produce the greatest long-term sustained yield (LTSY) because they would have more timber production acres than benchmarks 3 and 3a. Benchmark 2 would produce the greatest first decade level of volume (ASQ). The high first decade harvest rates in benchmarks 2 and 3 attempted to reduce the high level of available over-stocked stands more quickly than benchmark 2a or 3a. The first decade volume for benchmark 2A and 3A are lower than benchmarks 2 and 3 because they level out the flow of volume so that each subsequent decade volume is greater than or equal to the previous decade volume (nondeclining flow).

Table 30. Projected benchmark timber outputs (MMBF)

Benchmark	MAL		UMA		WAW	
	LTSY	ASQ	LTSY	ASQ	LTSY	ASQ
1	0	0	0	0	0	0
2	126	123	80	79	134	99
2a	126	86	80	40	134	55
3	112	107	71	57	114	83
3a	112	79	71	34	114	43

Summary of Wildlife, Fish and Grazing Benchmarks (from 1990 plans)

The nontimber benchmarks, including wildlife, wilderness, and range, were found to be appropriate and reasonable; and therefore no new ones were developed. These existing benchmarks provide a basis for developing a reasonable range of alternatives. The following table displays the 1990 benchmarks for livestock, big game, and fish.

Table 31. Maximum yearly benchmark outputs from 1990 forest plan summary of AMS

National Forest	Livestock Grazing (thousand AUMs)	Big Game Use (thousand user days)	Fish Production (thousand pounds per year)
MAL	194	168 (WFUDs)	43
UMA	103	580(WUDs)	28 (RVDs), no estimate of pounds but 1.7 million smolts produced per year
WAW	227	6,957 (WFUDs)	221

WUD= wildlife user days, WFUD= wildlife and fish user days, RVD= anadromous fish use days
AUM= animal unit month

Current Level of Goods and Services Provided by the Unit

The following tables display current levels of goods and services for several selected resources.

Timber

Table 32. Timber sale program quantity (million board feet per year)

National Forest	Million board feet
Malheur	30
Umatilla	27
Wallowa-Whitman	24

Range

Table 33. Animal unit months (AUMs) per year

National Forest	AUMs (thousand)
Malheur	132
Umatilla	48
Wallowa-Whitman	92

Wilderness Areas (Existing and Potential)

Table 34. Designated wilderness areas by national forest in the Blue Mountains

National Forest	Acres of Wilderness Areas (percent of national forest)
Malheur	81,970 (2%)
Umatilla	304,925 (22%)
Wallowa-Whitman	585,781 (24%)
Total	972,676 (18%)

Table 35. Potential wilderness areas by national forest in the Blue Mountains

National Forest	National Forest (acres)	Potential Wilderness Areas (acres)		Percent of National Forest
Malheur	1,708,960	16	149,590	9%
Umatilla	1,403,920	24	297,240	21%
Wallowa-Whitman	2,405,180	35	258,480	11%
Total	5,518,060	75	705,310	13%

Projections of Demand for Goods and Services

Timber

The timber supply and demand situation has changed dramatically during the past few decades. Since 1986, Oregon counties in the Blues study area have experienced an 84 percent decline in timber harvest. The majority of decline is attributed to a 95 percent decline in volume harvested from Forest Service timber sales (1986 to 2008). During the same time period, volume sold from the Malheur, Umatilla and Wallowa-Whitman National Forests declined 88 percent. Timber volume harvested from the three National Forests has declined dramatically, from a high of almost 600 million board feet during the early 1990s to about 50 million board feet today, excluding fuelwood.

A total of 24 processing plants have closed since 1980 in the eastern Oregon counties of the Blue Mountains (Lord 2009). Currently, there are 14 processing plants (able to process more than 10 MMBF per year) in the three state Blue Mountains area of economic influence.

According to Adams and Latta (2007), regarding future prospects for the timber industry, “The base case projection envisions a substantial near-term decline in eastern Oregon harvest and lumber processing capacity as private harvest falls. In this outlook, industrial lands are unable to sustain recent harvest levels and nonindustrial private forests ownerships do not increase harvest enough to compensate for the loss. Mill numbers decline by roughly one-third, with the largest losses in the Blue Mountains region. Impacts of the harvest decline on log prices are limited because demand contraction (mill closure) closely parallels the shift in supply.”

The timber industry surrounding the Blue Mountains National Forests has undergone significant declines in the past few decades. Solid-wood product prices will slightly rise, whereas, prices for paper and paperboard are expected to decline in real terms. These national level reports point to relatively stable supply-demand conditions. While this may be true nationally, it creates a problem locally. The stable end-product or output prices may mean that without advancements in

wood processing technology, log prices may remain low and not induce investments for local log supply or increased imports. Without a sufficient and reliable supply of logs, it is likely there will be continued reductions in wood product processing capacity.

Range

Livestock grazing on the Blue Mountains national forests is an important use to the local ranching industry. Grazing on public lands contributes directly to livestock forage needs. In 2009, the counties in the Oregon portion of the plan revision area had about 40 percent of the total cattle inventory of the state (USDA National Agriculture Statistics Service). Grazing on national forest lands directly provided about three percent of the forage needs of the local cattle inventory. The total contribution of national forest grazing is likely greater since ranchers have the opportunity to grow forage on other ranch lands for feed.

Total yearly forage production) is estimated to be 600 million pounds on the Malheur, 350 million on the Umatilla, and 650 million pounds on the Wallowa-Whitman.

The demand for forage from National Forest System lands is affected by the price that permittees have to pay for that forage. As long as that price approximates the appraised market value for that forage, the demand will remain high.

Wilderness

The following factors were summarized from the Blue Mountains wilderness need evaluation.

Use, Visitors, and Changing Patterns of Use

Currently, use of the Blue Mountains wilderness areas account for only a small part (8 percent) of the overall use on the Blue Mountains and even a smaller proportion (4 percent) of the use of national forest lands in the general vicinity. Use trend data suggests that aging populations and shifts in the type of activities younger people are interested in will result in a 2 to 8 percent increase in demand for activities during the next 15 years. This increase will primarily be in day uses from nonwilderness areas. Current wilderness areas in the Blue Mountains reach capacity only in specific areas during brief high use periods.

Opportunities for Unconfined Outdoor Recreation Experiences

The Blue Mountains provide high potential opportunities for unconfined recreation experiences and solitude, regionally and locally. The social demand for these unconfined experiences is related to general dispersed settings, not specifically wilderness areas that provide both motorized and nonmotorized activities. Management direction in the proposed revised land management plan will maintain many undeveloped areas where natural ecosystem processes predominate in both wilderness and nonwilderness settings.

Capacity of Designated Wilderness Areas to Support Human Use

Although social desires exist for more wilderness areas across the Blue Mountains, there is not a social need to designate additional wilderness because the current wilderness areas are not exceeding capacity, except in site-specific locations on limited occasions. Alternative sites exist within and adjacent to these areas and within other wilderness areas in the Blue Mountains to accommodate visitor responses to these instances. Based on current uses, trends, primary market zones, demographic changes, crowding levels, visitor pressures, projected uses, existing opportunities for unconfined recreation, and social values. Wilderness use is unlikely to exceed

the capacity of the existing wilderness areas and is not likely to result in a need for more wilderness in the next 15 years.

Determination of the Potential to Resolve Public Issues and Management Concerns

The forest plans for the Malheur, Umatilla, and Wallowa-Whitman National Forests share many common issues and resource similarities. The Forest Service established one team, the Blue Mountains Forest Plan Revision Team, to revise these forest plans. There are several reasons for this collaboration:

- All three forest plans were approved in 1990
- They share key issues, resources, customers, and interested entities
- Forest managers desire similar management across administrative boundaries

Since June 2004, the revision team has been working collaboratively with local communities to:

- Develop a vision for the future management of the Blue Mountains national forests
- Create the building blocks that will be used in the revised forest plans
- Identify the things in the current plans that are not working
- Craft revision proposals

The revision team worked with state government, county governments, tribes, and resource advisory groups as co-conveners for the collaborative process. These groups have broad networks of contacts, have expertise in land management planning, and have demonstrated that they can build partnerships, resolve conflicts, and solve problems.

Determination of the Need to Establish or Change Management Direction

Legal Requirement

The existing forest plans for the Malheur, Umatilla and Wallowa-Whitman National Forests are more than 20 years old. The National Forest Management Act of 1976 requires each national forest to revise its land and resource management plan every 10 to 15 years. Since 1990, economic, social, and ecological conditions have changed; new laws, regulations and policies are in place; and new information based on monitoring and scientific research is available. The forest plan for the Malheur National Forest was signed on May 25, 1990 and has been amended 67 times. The forest plan for the Umatilla National Forest was signed on June 11, 1990 and has been amended 34 times. The forest plan for the Wallowa-Whitman National Forest was signed on April 23, 1990, and has been amended 40 times. It is evident that the forest plans need to be revised to evaluate and incorporate these changes as appropriate.

Other needs for change include the need to:

- Eliminate redundancy and process requirements
- Improve consistency of management between the three national forests
- Incorporate best available scientific information
- Provide for more protection of terrestrial plant and animal species and their habitats

- Provide for more protection of watersheds and aquatic habitats
- Improve management of fuels and fire risk
- Address resiliency in the face of climate change
- Provide better recognition of the interdependency of social and economic components with national forest management

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