Klamath National Forest Land and Resource Management Plan

Chapter 4 - Management Direction

Including all amendments as of 07/29/2010

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Chapter 4 - Management Direction

Introduction

Direction for the Klamath National Forest (Forest) was developed based on an ecosystem approach. Emphasis is on maintaining and restoring ecosystem health to provide for the great variety of terrestrial and aquatic species that use the Forest.

Management direction contained in this chapter will guide the administration and resource use of the Forest until this Forest Plan is amended or revised. This Forest Plan is designed to be a full public disclosure of management practices and activities planned for the Forest. The document provides Forest managers with consistent direction for implementing management practices and activities.

The hierarchy of management direction and intent for the Forest can be found in laws passed by Congress, such as the National Environmental Policy Act (NEPA), National Forest Management Act (NFMA), Resources Planning Act (RPA), Multiple Use Sustained Yield Act, Endangered Species Act and others that provide direction on various aspects of Forest management. The Forest Service Mission Statement embodies the intent of these laws and regulations. More specific regulations and policies for meeting legislative direction are contained in the Code of Federal Regulations, the Forest Service Manual and the Pacific Southwest Regional Guide. This Forest Plan supplements the direction found in those documents. The Plan sometimes also restates Forest Service policy and law, but only to emphasize the management direction or to clarify the direction.

Substantial portions of the management direction for the Forest were directed by the Record of Decision (ROD) for the Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl (FSEIS). The ROD with its attached Standards and Guidelines provided additional direction in the form of land allocations and associated goals, standards and guidelines.

Direction from the ROD has been integrated with other Forest Plan management direction for the Klamath National Forest in this chapter. Direction obtained from the ROD is identified with an asterisk (*). Additional background and descriptive information useful for understanding direction from the ROD can be found in the ROD with its attached Standards and Guidelines, which is a document in the planning records for this Forest Plan.

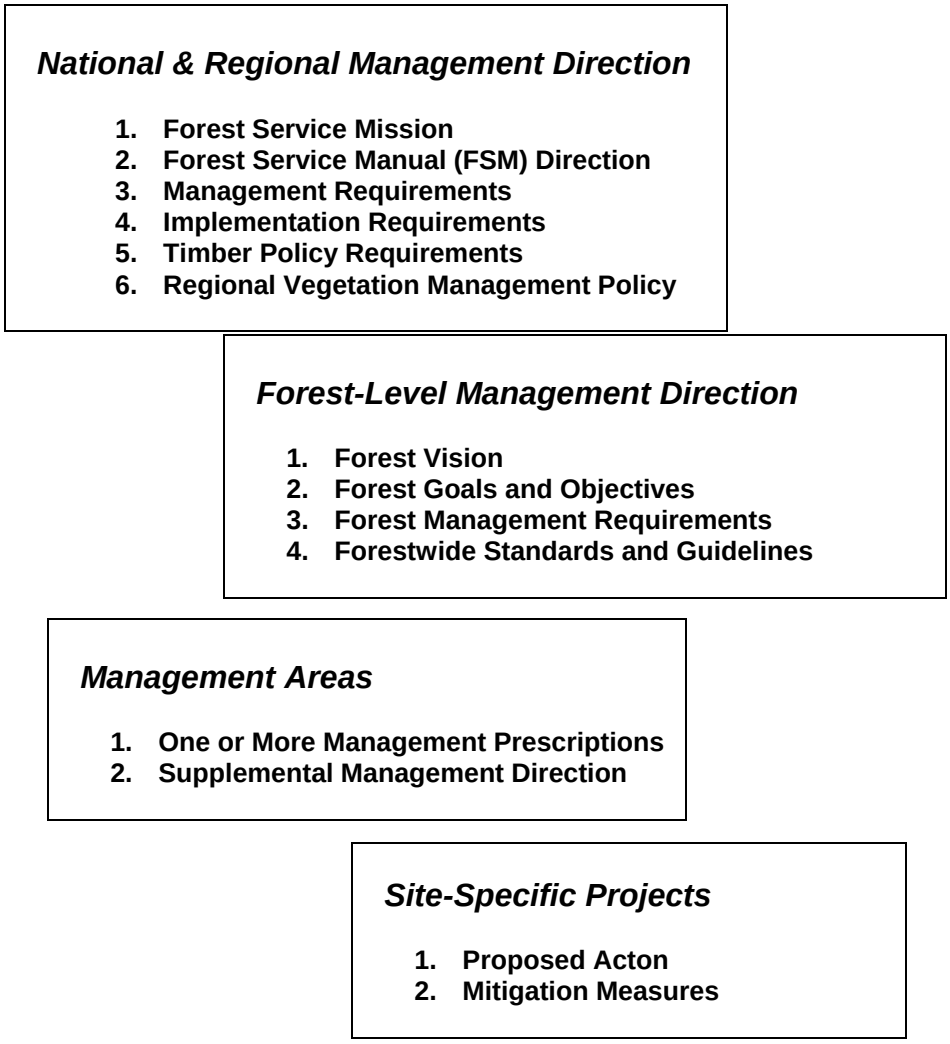
Figure 4-1 displays the hierarchy of management emphasis and direction. This direction applies to National Forest System (NFS) lands and not to private lands within or near the National Forest.

The USDA Forest Service Mission Statement and the Klamath National Forest Vision Statement have been included in the beginning of this chapter to provide the reader with an overview of management intent. Following these sections is a description of the Forest goals and program emphasis areas, along with the desired Forest outputs and objectives. Following that are the Forestwide and management area standards and guidelines.

The Forest Service Mission and the Forest Vision Statements provide broad direction for the Forest about the types of goods and services to be provided. The Forest goals and program emphasis, as well as the Forest objectives, are quantified in Table 4-1 (outputs), the land allocations, resource activities and operating costs projected over the next 10 years. Specific management direction is found within the:

> *Forestwide Standards and Guidelines* - This section includes management actions applicable to all lands within the Forest wherever and whenever relevant situations occur. Application areas are not mapped and may change from time to time.

Figure 4-1. The Management Direction System on the Klamath National Forest



Management Areas (Prescriptions) - This section contains an integrated set of management activities and practices conducted on geographically locatable areas. Each prescription contains management direction as well as standards and guidelines that govern project implementation and activities. Since management areas can overlap, some acres may be double-counted (for example, some Wild River segments are in wilderness). Therefore, the sum of acres for all management areas exceeds the total Forest acres.

This chapter will: (1) layout the framework for implementing ecosystem management, (2) discuss the resources that will be emphasized throughout the Forest, (3) establish the goals and objectives for goods and services to be provided over the life of the Forest Plan and (4) prescribe direction to achieve specific goals and objectives. This management direction intends to provide a framework for project planning and implementation.

The annual budgeting and program planning process is the fiscal backbone of this management direction. The ability to meet the goals and objectives outlined in the Forest Plan depends on the availability of funds that are appropriated by Congress and then allocated to the Forest through the budget process. In addition, project-level implementation may vary due to unforeseen conditions. In these cases, the Forest will continue to strive to accomplish the Forest goals and objectives. Changes in management direction will be accommodated through amendments and revisions of this Forest Plan, as described in Chapter 1.

Implementation of the Forest Plan is accomplished through site-specific project planning. An environmental analysis will be conducted for project-level decisions, as required by NFMA and NEPA. The environmental documents will tier to the Forest Plan Environmental Impact Statement (EIS).

USDA Forest Service Mission

The Forest Service Mission as identified in the USDA Forest Service Strategic Plan (2000 Revision) is as follows:

Mission: To Sustain the Health, Diversity and Productivity of the Nation's Forests and Grasslands to Meet the Needs of Present and Future Generations.

Klamath Forest Vision

We envision the Klamath National Forest as a place where...

- The desired future condition of the land guides our resource management actions.
- Ecosystem sustainability is pursued through integrated resource objectives.
- The desired future condition is a healthy forest that produces resource values, uses, products, and services to enhance the quality of life of the American people.
- It is understood that human communities are an integral part of the forest ecosystem.
- Ecosystem health and integrity are the ultimate measures against which we judge our proposed actions and gauge our successes.
- A variety of pleasing environments are actively managed for the recreational benefits of both area residents and Forest visitors.
- The latest research and technology are utilized to achieve the desired future condition.
- Management of the Forest extends beyond land stewardship to include an active role in rural development.

We envision the Forest's workforce as one which...

- Recognizes that teamwork and shared leadership are essential, and seeks the counsel of partners and cooperators both inside and outside the agency.
- Actively recruits, mentors, develops, and retains quality employees.
- Is committed to its responsibility as stewards of the land for future generations.
- Values the richness of differing viewpoints and exercises the freedom to challenge from within to bring those views into light.
- Feels involved in, and supportive of, the processes by which decisions are made.
- Enjoys the reputation of being one of the best places to work in the Forest Service.
- Capitalizes on the benefits of a culturally and socially diverse workforce.
- Feels empowered and responsible for themselves, their actions, and their careers.

- Acts with highest regard for the standards and ethics of government service.

Forestwide Goals

The National Forests are to be managed under a group of laws and regulations to maintain healthy, resilient, functioning ecosystems that provide the American public with resources on a sustained basis. The intent of National Forest management is to provide the greatest net public benefit while enhancing the productivity of the land. However, the National population is a mix of many cultures and people with complex needs. All the needs and desires of this diverse Nation cannot be met on a single National Forest at the same time.

The Forestwide goals provide a general management direction. There are 4 categories of goals (**sustainability, environmental health and community stability, active stewardship** and **participative management**) that must mutually support each other's aims. The goals cannot be viewed independently and should be considered in a collective context, as part of an ecosystem management approach. They represent the management values described in the Forest Plan. The Forest will work as a single unit to implement these goals.

Sustainability

Collectively pursue ecosystem sustainability through integrated resource objectives.

Seek to achieve goals in an integrated fashion rather than seeing one resource as a constraint upon others. Foster active solutions to resource issues, rather than loss of land base for activities.

Carefully conserve resources that cannot be replaced. Cultural resources, soil, species and genetic diversity require special management due to their irreplaceable nature.

Environmental Health and Community Stability

Manage for a diverse and productive environment. Utilize or emulate naturally occurring, dynamic, ecological processes to implement management actions. Manage for the long-term, broad-scale stability of local communities.

Acknowledge that the dynamic nature of the Forest precludes the assumption that physical and biological resources have a static nature or that they can be preserved indefinitely as they exist.

Avoid management actions that would create conditions that lead to abrupt, large-scale changes in the flow of resources or ecological conditions. Manage the changes to communities as a result of Forest management actions.

Provide an even flow of renewable resources and thus assure their availability to enhance community stability. Within the limits of competitive forces that shape the economy, provide a stable resource base upon which management may proceed.

Active Stewardship

Manage with the highest standards of stewardship by working to meet the needs of the Nation for wood, water, forage, wildlife, recreation, and other resources.

Seek the best combination of land uses to achieve the greatest public benefit in the long-term.

Actively manage the land and resources in an environmentally sound manner to achieve the intent of the Forest Service mission: sustainable production of forest products and appropriate human uses of the land and resources.

Swiftly incorporate new information and technology into management actions.

Participative Management

Actively cooperate and coordinate with Federal, State, local agencies, governments, and Indian tribes.

Seek input and assistance from groups and individuals in management activities.

Jointly address issues extending beyond Forest borders with affected interests.

Provide assistance and input to improve land management, knowledge of the environment, and social and economic conditions.

Forest Program Emphasis

Goals have been identified for each resource program and for integrated emphasis areas. The Forest intends to place special attention in these areas. These goals are subordinate to, but consistent with, the Forestwide goals and are part of the ecosystem management approach. These emphasis areas do not in any way reflect the entire program direction or planned accomplishments, but are intended to show the breadth and flavor of the Forest program.

Physical Environment

Achieve water quality objectives through the use of Best Management Practices (BMPs).

Identify areas where erosion levels are unacceptable. Eliminate the causes or mitigate the effects and develop restoration efforts to reduce erosion rates to a level that meets the Forest goals.

Identify toxic substances that are hazardous to Forest employees and the public as defined by the Occupational Safety and Health Administration and Office of Emergency Services. Minimize risk by treating or removing known hazards.

Geology

Promote slope stability and maintain soil productivity on geologically unstable lands.

Manage the cave resources on the Forest in compliance with the 1988 Federal Cave Resources Protection Act.

Soils

Maintain soil productivity.

Reduce the level of management activity-related soil erosion where soil erosion has been identified as adversely affecting beneficial uses.

Water Quality

Provide instream flows of sufficient quality water to support existing or desired riparian and aquatic habitats that maintains desirable water temperatures and that are within the natural ecological fluctuations.

Maintain or restore water table levels within existing wet meadows.

Air Quality

Maintain air quality consistent with legal requirements.

Manage prescribed fire, and prescribed natural fires, to avoid prolonged air quality impacts to local communities.

Biological Environment

Manage to sustain healthy, resilient forest rangeland and aquatic ecosystems. Produce commodity outputs at levels that are consistent with managing those ecosystems.

Provide goods and services to the public in an environmentally sound fashion to meet the short- and long-term needs of the Nation.

Swiftly translate new knowledge on Forest relationships and functions, management strategies, and techniques into management actions where applicable to the Forest.

Develop an integrated vegetative inventory, based on ecological classifications.

Cooperate with State, Federal, and local agencies during fish and wildlife habitat planning and improvement.

Promote the awareness and appreciation of wildlife, fish, and plant resources.

Biological Diversity

Manage for desired compositional, structural, and functional attributes of biologically diverse forest, rangeland, and aquatic ecosystems consistent with ecological processes in the province. Recognize the importance of the interactions of ecosystems at the regional, landscape, and site levels.

Maintain diverse and productive wildlife, fish, and Sensitive plant habitats as an integral part of the ecosystem.

Manage for desired healthy, resilient populations commensurate with ecological processes (such as fire), while meeting the multiple use objectives. Strive to meet the 1990 RPA population targets for selected species.

Manage for a healthy forest, within the natural ecological processes of the Klamath Mountain Province.

Emphasize the maintenance or improvement of Endangered, Threatened and Sensitive (TE&S) species habitat, species associations habitat, and game species habitat. Use specific project direction found in the Recovery Plans for individual species to help recover the viability of species currently listed as Endangered and Threatened. Manage to provide "good" habitat conditions for these groups, if that habitat type is within the range of the natural ecosystem.

Aquatic Conservation Strategy Objectives

* Maintain and restore the distribution, diversity, and complexity of watershed- and landscape-scale features to ensure protection of the aquatic systems to which species, populations, and communities are uniquely adapted.
* Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic- and riparian-dependent species.
* Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.
* Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction and migration of individuals composing aquatic and riparian communities.
* Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage and transport.
* Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.
* Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.
* Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.
* Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.

Wildlife

Coordinate habitat improvement activities with the California Department of Fish and Game (CDFG) to help meet the State's management plan goals for deer, pronghorn antelope, and other species.

Develop and/or maintain unique wildlife habitats on the Forest, such as wetlands, meadows, rocky cliffs, etc.

Fisheries

Coordinate internally and externally to implement the Aquatic Conservation Strategy and manage RRs consistent with Forest direction.

Work to increase public awareness and appreciation of aquatic resources.

Resource Management Programs

Integrate resource needs through ecosystem analysis and project planning using the interdisciplinary (ID) team process to its fullest extent. Stress cooperation between resource programs that promotes a cost-effective, efficient use of resources to accomplish the management objectives and meet the desired future conditions.

Develop a consistent approach to determining the current resource conditions and make predictions about the effects of proposed management actions.

Visual Resource Management

Manage visual resources to conserve the natural scenic character of the Forest. Meet the Forest Plan's adopted visual quality objectives (VQOs). Emphasize management of the visual resource seen from communities, high-use recreation areas and major roads and trails. Conserve the inherent scenic attractiveness of distinctive landscapes.

Rehabilitate areas not currently meeting VQOs.

Recreation Management

Develop a program that is supportive to the communities' efforts to diversify, strengthen, and attract natural resource-oriented activities and businesses, which will strengthen rural economies.

Offer a wide range of recreation attractions and opportunities that are responsive to the demands of multi-cultural, traditional, and non-traditional recreation users.

Locate and manage developed recreation sites primarily to support recreationists as they participate in off-site recreational activities within the recreational emphasis areas, with the exceptions of Kangaroo Lake and Juanita Lake, which can provide a self-contained recreation experience.

Expand opportunities for barrier-free access for mobility-impaired individuals.

Implement the National, Regional, and Forest Recreation strategies.

Wilderness Management

Manage wilderness to maintain or enhance wilderness values.

Wild and Scenic Rivers Management

Manage to maintain or enhance the identified, outstandingly remarkable values and free-flowing condition of Wild and Scenic Rivers (WSRs).

Specially Designated Area Management

Emphasize the diversity of the Forest and recognize the many special areas and unique values. Develop these areas to allow public access and information about their value.

Develop partnerships to promote research efforts within Research Natural Areas (RNAs). Promote educational and interpretive opportunities within Special Interest Areas (SIAs).

Butte Valley National Grassland Area

Promote the development and sustained yield management of grassland ecosystems. Enhance soil, water, forage, fish, and wildlife resources in the area.

Enhance wildlife habitats and restore wetland values.

Lands Program Management

Achieve a land ownership pattern that improves Forest management options, reduces resource conflicts, and reduces administrative costs.

Law Enforcement

Protect life and property, and prevent violations of laws and regulations pertaining to Forest resources.

Resolve unauthorized uses of NFS lands.

Minerals Management

Manage mineral exploration and development of surface resources so as to maintain the environmental quality (to the extent feasible).

Transportation and Facilities Management

Provide an economical, safe, and environmentally sensitive transportation system for the Forest. Emphasize the maintenance and restoration of existing roads over the construction of new roads where appropriate.

Provide administrative sites and facilities that effectively and safely serve the public and accommodate the workforce. Provide facilities with barrier-free access.

Timber Management

Implement silvicultural prescriptions consistent with desired ecological processes and management objectives.

Reforest lands allocated to sustained timber production within 5 years of harvest. Actively reforest areas damaged by extreme events, such as floods, wind, fires, or insect infestations.

Prepare and offer the Allowable Sale Quantity (ASQ).

Utilize dead or dying trees to produce wood products when consistent with the Forest goals.

Implement post-sale treatments commensurate with resource program needs.

Manage the spread and occurrence of forest insects and diseases, where necessary, to maintain a functioning ecosystem.

Fire Management

Reintroduce fire into the environment through wildland fire managed for resource benefits and prescribed fire, where Forest ecosystems evolved under the influence of wildfires.

Reduce unacceptable fuel buildups and potential acreage of future high intensity wildfires.

Use the appropriate minimum impact suppression methods to control wildfires.

Develop management and protection strategies for inter-mixed State and private forest lands.

Range Management

Manage vegetation to provide for healthy ecosystems and to make forage available on a sustainable basis for use by livestock, wildlife, and wild horses. Manage vegetation to provide for a desired condition of herbaceous shrub and forested vegetation according to site potential and resource needs.

Manage grazing activities to not retard or prevent attainment of the Aquatic Conservation Strategy objectives.

Provide forage to support big game objectives established by the CDFG and to meet current livestock forage allocations.

Wild Horse Management

Manage for 1 viable wild horse herd.

Heritage Resource Program

Sustain a progressive Heritage Resource Program (previously Cultural Resource Management Program).

Inventory known cultural sites and determine the significance of each site.

Tribal Government Program

Improve relationships between the Forest Service and Indian people.

Develop partnerships with local Native American organizations.

Emphasize increasing understanding, communications, and partnerships between Forests and Indian tribes, organizations and communities.

Social and Economic Environment

Develop partnerships with local and regional groups to emphasize environmental education, public awareness, and knowledge about Forest processes.

Adaptive Management Area

* Develop and test new management approaches to integrate and achieve ecological and economic health, and other social objectives.

Public Interaction and Involvement

Use all opportunities to explain the Forest's role in implementing the USDA Forest Service's Mission.

Use the best information available to make informed decisions. Work with local, Regional, State, and Federal agencies and private individuals to acquire the information. Share professional services, knowledge, equipment, and materials to manage resources effectively.

Seek public interaction and involvement from potentially affected individuals when implementing Forest activities. Design the interactions to allow for a useful exchange of ideas and information.

Economic

Promote the economic stability of local communities. Develop partnerships with local and Regional agencies, groups, or individuals to promote economic stability.

Promote the development of non-traditional, Forest-based resources that could contribute to the economic stability of the area. Emphasize the harvest of wood fiber (biomass), fishing and wildlife viewing, harvest opportunities, and recreational opportunities, while meeting resource management goals. Highlight the importance of a visually pleasing setting to support local economic development strategies that focus on recreation opportunities or tourism.

Encourage and explore opportunities to increase the utilization of wood products.

Ecosystem Approach to Management

An ecosystem approach to management will be used which includes analysis at a hierarchy of scales using information about spatial and temporal patterns at each scale. It also includes information about people's traditional and changing perceptions, beliefs, attitudes, behaviors, needs, and values. Information about past, present, and possible future influences of humans on ecosystems must also be considered.

A national hierarchical framework of ecological units has been proposed by the Forest Service to classify land based on combinations of physical and vegetative factors. The hierarchical structure of ecological systems allows characterization of ecosystems and the identification of patterns and processes of interest at different scales. Ecosystem composition, structure, and function determine diversity patterns across a range of scales. The ecological hierarchy of interest is determined by the purpose of the project or desired condition. In order to determine sustainability of an ecosystem, patterns, and ranges of variability must be defined at all relevant scales.

The Hierarchical Framework

Complex landscape patterns, and the many processes that form them, exist within a hierarchical framework consisting of systems at many scales. These scales can be viewed as constraints in which a higher level of organization provides, to some extent, the environment from which the lower levels evolve. Every level is a discrete functional entity and is also part of the larger whole. The hierarchy concept allows us to define the components of an ecosystem or set of ecosystems and the linkages between different scales of ecological organization.

The levels of hierarchical scale are defined below.

Continent or Ecoregion

This is a broad level scale used to address international, national and broad geographic issues which include basic biophysical/social parameters. Delineations at this scale might be divisions or provinces for terrestrial systems, continental or regional river basins for aquatic systems, and national level economic or social value units. The Klamath National Forest is located in the Humid Temperate Domain, Mediterranean Regime Mountains Division using the National Hierarchy.

The Final Supplemental Environmental Impact Statement (FSEIS) on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl and its associated Record of Decision (ROD) for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl which provides regional direction for the Forest Plan fits this scale.

Subregion

This level addresses issues and basic ecosystem characteristics at the scale of states, combination of states, National Forests, combinations of National Forests based on terrestrial sections and subsections, river basins, state or regional economies, and scale-appropriate social value units. The Klamath National Forest lies within the Sierran Forest - Alpine Meadows Province, Klamath Mountains section using the national hierarchy developed by the Forest Service. The Forest lies within the California Klamath and California Cascades Physiographical Provinces in the hierarchy used to analyze terrestrial ecosystems in the FSEIS. The Forest also lies within the Klamath River Basin, which will be used to analyze aquatic ecosystems at the river basin scale.

The Forest Plan also fits within this scale, but the Forest as a unit of analysis is based on administrative boundaries, rather than ecological units. The Forest Plan sets broad, programmatic direction for the Forest through land allocations and through standards and guidelines.

Landscape or Watershed

This level addresses issues at the scale of land type associations, watershed groups, and local economies. It occurs between subregional analysis and site-specific analysis. Human interaction at this level relates directly to local communities.

The Forest has developed an ecosystem analysis process to be used at the landscape or watershed level. It is consistent with the watershed analysis for ecosystem management described in the FSEIS and it borrows largely from other processes developed in Forest Service Regions 1 and 6. This analysis process will be used to assess ecosystem management concerns and needs at this level and will be an integral part of Forest Plan implementation. It will provide the basis for developing project-specific proposals and determining monitoring and restoration needs within landscape/watershed units. A map of the proposed landscape/watershed units is included in the map packet for the Final Forest Plan and EIS.

Ecosystem Analysis at the landscape level includes describing the biological and physical features in an area, the important processes or organisms that operate at this level, and how those features and processes/organisms interact. It has a number of objectives. One is to describe how the landscape/watershed unit performs as a system. Another is to determine disturbance agents, which have operated in the system. A third is to identify which standards and guidelines from the Forest Plan apply to the area and describe the desired condition for the landscape/watershed unit. The desired condition from the Forest Plan is refined and made more site specific, based on what was learned in the analysis. Management opportunities are then identified that will enable the Forest to either maintain or meet the desired condition. Another objective is to provide opportunities for the public to give their input on what is important to them in a

particular area, on how the Forest Plan should be implemented within the landscape/watershed unit, and to share any knowledge of the area that would be helpful in the analysis.

Ecosystem analysis of cumulative effects should generally include the effects of activities on non-federal land for watershed effects and for fuel effects.

Site

This level deals with site-specific management activities. It includes information specific to sites, stands, streams, reaches, local economies, and local social values. Human interaction at this level incorporates specific individual and interest group involvement with identified projects.

Forest Plan standards and guidelines provide management direction for implementing project proposals at this level. The information developed in the ecosystem analysis, especially the desired future condition description, is used to identify project-level opportunities. National Environmental Policy Act (NEPA) analysis at the project-level must precede all site-disturbing decisions made at this level.

Adaptive Management Approach

* Adaptive management is a continuing process of action-based planning, monitoring, researching, evaluating, and adjusting with the objective of improving the implementation and achieving the goals of this Forest Plan. The Forest Plan standards and guidelines are based on current scientific knowledge. To be successful, there must be flexibility to adapt and respond to new information. Under the concept of adaptive management, new information will be evaluated and decisions made whether to make adjustments or changes.
* The Forest Plan incorporates the concept of adaptive management. This approach will enable resource managers to determine how well management actions meet their objectives and what steps are needed to modify activities to increase success or improve results.
* The adaptive management concept applies to all lands in the Forest. The Goosenest Adaptive Management Area, described later in this chapter, is a specific area dedicated primarily to the objective of development and testing of new approaches for integration and achievement of ecological and economic health, ad other social objectives.

Outputs

Table 4-1 displays some of the outputs that are likely to be generated by implementing ecosystem management as described in this Forest Plan. These projected outputs provide a yardstick by which to measure future accomplishments. However, outputs are not the goals of the Forest Plan, but merely an expected result of ecosystem management. Other expected results, those that can't be easily quantified, are described in the Desired Future Condition for the Forest and for each Management Area.

Table 4-1. Projected Average Annual Outputs by Decade					
	Base Year	1990 RPA Goals	Decade		
Resource Element	**1987**	**2000**	**1**	**2**	**5**
Physical Environment					
Water Yield (Million acre feet)	3,952	-	3,979	-	3,982
Quality (Million acres feet meeting standards)	3,911	-	3,959	-	3,930
Watershed Improvement (Acres)	325	575	2,100	-	2,100
Biological Environment					
Endangered, Threatened, and Sensitive Species					
Bald Eagle (Number of managed pairs)	5	5	5	5	5
Peregrine Falcon (Number of managed pairs)	14	9	14	14	14
Spotted Owls (M acres of suitable habitat)	458	-	-	-	552
Spring Chinook Salmon (Adults)	340	-	375	-	-
Summer Steelhead (Adults)	1,343	-	1,462	-	-
Wildlife – Direct Habitat Improvement (Acres/Structures)					
Big Game	600/0	-	900/0	-	900/0
All Other Species (except T&E)	100/0	-	890/6	-	890/6
Resource Programs					
Visual Quality (% in each VQO)					
Preservation	23	-	23	23	23
Retention	5	-	8	8	8
Partial Retention	28	-	47	47	47
Modification	29	-	15	15	15
Maximum Modification	15	-	7	7	7
Recreation					
Total Wildlife User Days	53,900	-	59,296	-	86,819
Total Fish User Days	88,000	111,000	96,800	-	163,100
Developed Use (M Recreation Visitor Days)	150	-	165	-	242
Dispersed Use (M Recreation Visitor Days)	437	-	481	-	704
Wilderness Use (M Recreation Visitor Days)	71	77	78	-	114
Recreational Opportunity Spectrum (M acres)					
Primitive	208	-	208	208	208
Semi-Primitive Non-Motorized	340	-	301	301	301
Semi-Primitive Motorized	36	-	63	63	63
Roaded Natural	802	-	730	730	730
Rural	294	-	378	378	378
Proposed Wild and Scenic Rivers (miles)					
Wild River	0	-	101	-	-
Scenic River	0	-	10	-	-
Recreational River	0	-	60	-	-
Special Interest Areas (Number)	4	-	45	-	-
Research Natural Areas (Number)	0	-	9	-	-
Transportation					
Trail Construction/ Reconstruction (Miles)	0	-	10	-	-
Road Construction (Miles)	24	15	10	5	5
Road Reconstruction (Miles)	22	-	20	25	40
Road Maintenance (Miles)	535	-	521	521	541
Timber					
Allowable Sale Quantity (MMCF)	19	-	8	-	13
Allowable Sale Quantity (MMBF)	128	145	51	-	89
Long-Term sustained Yield (MMCF)	39	-	19	-	-
Long-Term Sustained Yield (MMBF)	260	-	128	-	-
Reforestation (Acres)	5,895	-	2,850	-	-
Timber Stand Improvement (Acres)	5,043	-	10,000	-	-
Fuel Treatment (Acres)					
Fire-related Treatment	400	-	9,375	9,375	9,375
Timber-related Treatment	5,298	-	3,183	3,183	3,183
Resource-related Treatment	0	-	14,550	14,550	14,550
Total Acres	**5,698**	-	**27,108**	**27,108**	**27,108**
Range					
Grazing (Thousands of Animal Unit Months)	34	34	34	34	34

Table 4-1. Projected Average Annual Outputs by Decade					
	Base Year	1990 RPA Goals	Decade		
Resource Element	**1987**	**2000**	**1**	**2**	**5**
Social and Economic Environment					
Total Budget (Millions of Dollars)	26	-	41	-	37
Present Net Value (Millions of Dollars)	2,335	-	1,700	-	-

Abbreviations: M = Thousand MMCF = Million Cubic Feet MMBF = Million Board Feet

Desired Future Condition of the Forest

Overview

The desired future condition is a picture of what the Forest would look like 10 years after implementation of the Forest Plan started. It is an expression of the Forest's goals and objectives on the land. It also provides a means for the Forest Service and the public to measure the success of Forest Plan implementation and describes the stewardship philosophy. The image of the Forest's desired future condition is like a motion picture rather than a frozen-in-time portrait. This is due to the dynamic nature of forest, rangeland, and aquatic ecosystems that comprise the Forest.

The desired future condition must consider ecological principles and processes. An ecosystem approach fully integrates disciplines and methods applied in resource management. Ecological processes include people, their demands, and their effects as components of the ecosystem.

Ultimately, the desired future condition is driven by the need to meet the goals established by the Forest. To meet these goals and arrive at the desired future condition, there must be flexibility to adjust to differing site conditions, adequate funding to implement projects and a monitoring plan in place to determine if management actions are attaining the desired future condition.

The desired future condition for the Forest is based on the philosophy that land stewardship is the highest priority. The Forest Plan provides management direction and proposes management activities to move the Forest toward the desired future condition and meets our management goals.

The Forest in 10 Years

At the end of the first decade, there will be changes in the Forest. In some cases, random ecological processes, independent of Forest management actions, will have shaped the landscape. In other cases, management actions implemented to meet resource objectives will have influenced the outcome.

The Forest will remain a place of high geologic diversity. The natural processes of landslides and hillside erosion will continue to shape and influence Forest ecosystems. Many landslides associated with past management activities will be stabilized. Much of this will be the result of the Forest's aggressive restoration activities. Productive forest soils will continue to provide the basic medium for the ecosystem. High quality water in Forest streams and rivers will continue to provide the medium for healthy riparian and aquatic habitats. The air quality over the Forest will be of high quality. Natural and prescribed fires will produce smoke over a longer period of the year than at present. During the summer months, there will be fewer periods of time when high levels of smoke emissions from wildfires fill the air.

Some watersheds that are currently in poor condition due to catastrophic fires or past management activities will begin to respond to restoration activities. In general, forested cover will be increasing while erosion and sediment production decrease.

The Forest will continue to be one of the most biologically diverse areas in the Nation. Biological diversity, although variable within natural limits at the stand and landscape levels, will be essentially the same as it is today at the Forest level. There will be a mosaic of vegetative patterns across the Forest. The composition and structure of forest, rangeland, and aquatic ecosystems will be within the natural range of variability. These ecosystems will function in a healthy manner and be resilient to changes, including repeated fires. Quality habitat will be present for aquatic and terrestrial species. Habitat will be conducive to the movement and interaction of species and to movement across landscape and Forest boundaries. The distribution of species will help insure perpetuation of healthy populations.

Ecological processes will be the primary influence evident in late-successional and "old growth" habitats, specifically in locations where wildfires are no longer suppressed. Over time, a larger portion of terrestrial habitat will favor species dependent on older forest habitats instead of those that thrive in younger, more open forests. However, overall species richness will remain essentially as it is today. Habitat components, such as snags and down logs, will be distributed across the Forest at levels that support species and

organisms that depend on these forest attributes for existence. The Forest will be capable of supporting a growing population of TE&S species due to the increase in late-successional habitat and other habitat conditions essential to these species. The population of Roosevelt elk will be large enough to support sport hunting of this reintroduced species.

High quality aquatic habitat will be capable of supporting abundant populations of anadromous and resident fish and other aquatic species. These ecosystems will be healthy and resilient to change.

The mixture of seral stages for forests and rangeland cover type will be capable of providing for a diversity of terrestrial and aquatic species. Wildfires and vegetative management activities will provide patches of early seral stages in a variety of patch shapes and sizes throughout the landscape.

The amount of acres burned in high intensity wildfires will have decreased significantly due to the large, aggressive fuel management program reducing fuel loading throughout the Forest. There will be more acres of lower intensity fires similar to conditions prior to 1900. These lower intensity fires will begin to create a more open forested condition in many areas.

Stands of Port-Orford-cedar, Brewer spruce, and Pacific yew will be healthy and resilient to insects and disease.

The landscape will appear to be primarily shaped by ecological processes, rather than management activities. Openings in the forest canopy created by vegetation management will not be readily evident. Existing clearcut units that are apparent today will blend into the surrounding vegetation in the future, as planted trees mature and visual restoration projects soften sharp contrasts in line, form and color.

As recreational use increases, the presence of Forest visitors will be more evident. Information and interpretive programs help make visitor experiences more enjoyable. Roads will provide safer and more efficient access to special features, such as Wild and Scenic Rivers.

There will be a variety of high quality recreational opportunities including developed campgrounds with multi-family facilities in relatively uncrowded, visually attractive settings. Recreation programs, consistent with current trends, will emphasize recreational vehicle access, mountain bike trails, interpretive areas, etc. Trails will serve as primary transportation arteries and, in some cases, as stand-alone recreational attractions. The trail system will provide for a variety of uses and users. Primary trails will be maintained as needed to assure continuous access. Secondary trails will sometimes not be easily passable, especially for other than hikers. Recreation projects will be constructed in close cooperation with the public.

Wilderness and RNAs will be primarily shaped by ecological processes, although trails, livestock and other evidence of human use might be noticeable. Management activities, while visible in local areas, would not be obtrusive.

Land patterns in some areas of the Forest will be modified to accommodate the planned development of specific communities within the Forest boundaries. Acquisition or disposal of some priority lands will result in less mixed ownership across the Forest.

Mineral development on the Forest will continue as primarily small operations. Large scale development will be driven by National demand.

The road system will be well-developed in some areas. Other areas will be roadless. Some roads will show signs of improved maintenance and surfacing. Many roads will be permanently closed by barriers or seasonally closed by gates. Some of the closed roads will have been reseeded. Other roads will have been obliterated. The net miles of roads open for vehicle travel on the Forest will decrease. While opportunities for roaded recreation may be limited to fewer open miles of roads Forestwide, roads that provide access to key recreation areas will be maintained to a higher level, likely increasing use in these locations.

In most cases, management activities designed to meet the goals and objectives of non-timber areas would not be noticeable except from up close. An example would be silvicultural thinnings within "old growth"-dependent wildlife habitat to hasten the development of large trees with multiple canopy layers.

Vegetative changes will be more evident where the land capability has changed or where fires have modified the landscape. Forest visitors will see growth in tree plantations previously harvested and reforested. Large areas of the Forest will have trees of all ages visible within them, ranging from seedlings to "old growth."

Timber management activities will occur within specific areas of the Forest. These areas will be scattered throughout the Forest, but not along main travel routes, river corridors or sensitive geologic areas (such as those areas prone to landslides). In these areas, timber harvest units may be noticeable. Regeneration areas will have many large trees remaining within the harvest units. The shape, size, and placement of these units will be similar to the surrounding patterns of vegetation.

Within harvested units there will be hardwood species, young trees, and snags. Small openings and individual tree harvest units will be common. The number and size of openings created for management purposes will be similar to the patterns of openings that occur naturally on the Forest.

Timber outputs produced annually from the Forest will be significantly less than in the past. However, these outputs will be at a predictable and sustainable level, providing greater stability to local communities than currently.

Healthy and resilient rangeland ecosystems provide sustainable forage for use by livestock, wildlife, and wild horses.

Local communities will have a broadened economic base to support quality of life. New forest-based products will contribute to the economic base.

Interested members of the public will be actively involved in the Forest decision-making process, from the start of projects through implementation of proposed activities. There will be frequent interchange between Forest employees and interested individuals and personnel from cooperating groups and agencies. The Forest's workforce will better reflect the cultural diversity of the Nation as a whole.

Standards and Guidelines

Standards and guidelines are the rules and limits governing actions, and the principles specifying the environmental conditions or levels to be achieved and maintained. Management of the Forest is subject to applicable laws and regulations. Particular reference is made to the management requirements of 36 Code of Federal Regulations (CFR) 219.27. The standards and guidelines are intended to help the manager achieve the goals and objectives of the Forest, while staying within the constraints prescribed by law and the agency, to achieve the desired future condition of the Forest. The nature and design of the standards and guidelines are intended to help the Forest arrive at the desired future condition. The monitoring plan, described in Chapter 5, will be a required element of the Forest Plan. The monitoring plan will determine if standards and guidelines are implemented and if the anticipated results are achieved.

Two categories of standards and guidelines are applied to management of the Forest. Forestwide Standards and Guidelines apply to all management areas, unless specifically excluded by the direction for that specific management area. Management area standards and guidelines apply only to the specific management area.

Management area boundaries are not intended to be fixed lines. Instead, they are blended from one area to the next, based on the goals and objectives of the management areas and the local conditions of the Forest. Where management areas overlap, the standards and guidelines that are most constraining for that resource take precedence, unless otherwise stated. Because management areas can overlap, some acres may be double-counted. The sum of acres for all management areas exceeds the total Forest acres.

* Additional direction includes, but is not limited to, directives, policy, handbooks, manuals as well as other plans, regulations, laws and treaties. The standards and guidelines presented here supercede other direction except treaties, laws, and regulations. These standards and guidelines do not apply where they would be contrary to existing law or regulation or where they would require the Forest to take action for which it does not have authority.

The intent of the standards and guidelines is to meet the stated goals and objectives. However, there may be many different ways to achieve the desired results. In these cases, the manager is expected to utilize all available information, techniques, and knowledge to maximize the benefits of the action proposed.

The standards and guidelines describe what will and what will not occur in a particular area to achieve the desired goal. Because of the great variety of resources and circumstances, provisions are hereby made for unusual and unforeseen implementation problems. Some of these problems will be the result of insufficient or inaccurate inventory data used in the Forest Plan. In these cases, the NEPA process will guide the project planning effort and must be followed to make a departure from the standards and guidelines. Depending on the scope and/or intensity of the change or modification, it may result in an amendment or revision of the Forest Plan. A situation must be fully described, alternatives developed and costs evaluated when evaluating the need for changes to the Forest Plan.

Forestwide Standards and Guidelines

Physical Environment

General

1-1 Forest management activities shall comply with all applicable laws and policies described in the Organic Administration Act of 1897, the Multiple Use-Sustained Yield Act of 1960, the NFMA of 1976 and Forest Service Manual (FSM) 2550. Wetlands and floodplains that exist on the Forest shall be managed according to Executive Order 11988, Floodplain Management (as amended) and Executive Order 11990, Protection of Wetlands (as amended).

1-2 Identify areas of unacceptable soil erosion during project planning or project implementation so project plans for restoration and improvement can be developed. Restoration efforts not completed during project implementation may be added to the Watershed Improvement Needs (WIN) inventory for future review and treatment. Keep the WIN inventory current. Watershed improvement efforts should be cost efficient and effective in meeting the management objectives.

Best Management Practices

1-3 Implement BMPs to meet geologic, water, soil, and air quality objectives.

Hazardous Material

1-4 Forest Spill Contingency Strategies shall be prepared by the Forest, reviewed annually and updated as necessary. Treat known, or newly located, hazardous material spills, dumps, abandoned mines and landfills in accordance with Forest Spill Contingency Strategies and any Regional strategies. Coordinate the cleanup of hazardous material spills with the proper State and local agencies. Coordinate the clean-up of illegal hazardous material dumps with State and local agencies responsible for hazardous materials, as well as the Environmental Protection Agency (EPA) and appropriate law enforcement organizations.

1-5 Remedy or remove instances of suspected or known contamination of surface water, ground water or soil by hazardous or toxic substances as appropriate. Appropriate Federal, State, and local regulations and guidelines will be followed. Actively pursue potentially responsible parties to recover the cost of the cleanup and assess any damages to natural resources.

1-6 Where existing roads and trails travel through asbestos-bearing formations or where roads are surfaced with asbestos-bearing aggregate, potential mitigation measures, such as road or trail relocation, closure, paving and watering, shall be considered to maintain public safety. Follow Occupational Safety and Health Administration and Office of Emergency Services regulations on hazardous materials. Asbestos-containing aggregate may be used as road surface materials if asbestos levels fall within the standards established by the State of California.

Geology

Geologically Unstable Lands

2-1 Manage vegetation on geologically unstable lands (including active landslides, all inner gorges, margins and toe zones of dormant landslides and severely weathered and dissected granitic lands) to maintain or enhance slope stability and soil productivity according to Riparian Reserves standards and guidelines.

2-2 Project-level monitoring and review of lands identified as geologically unsuitable to support a sustained timber program (36 CFR 219.14 (a)) shall be used to modify Forest-level information. Update the Forest-level information as necessary.

2-3 A geologic evaluation will be conducted for all projects involving ground- or

vegetation-disturbing activities on potentially unstable land. Such land includes, at a minimum, all of the geologically sensitive land identified in the geologic layer of the Forest Plan database (refer to the Glossary). These investigations will include geologic hazards and resource assessments, development of management requirements and mitigation measures, and documentation. All such investigations will review for accuracy the geologically unsuitable lands, which are identified in the project area on the geologic layer of the Forest Plan database, and other potentially unstable lands. Recommendations for inclusion of more land into this category and/or exclusion of other lands will be provided.

These geologic investigations will be conducted in a way consistent with the generally accepted standards of the profession. Documentation will include: a summary or abstract, observations, analysis, conclusions, recommendations and references, and be in a format compatible with NEPA requirements.

Data collection will include all information needed to adequately address the geologic questions at hand. Minimum data necessary for projects involving ground- or vegetation-disturbing activities in areas containing geologically sensitive lands (refer to the Glossary) are as follows:

a) Distribution of rock types and relevant structural features within the project area,

b) Distribution of geomorphic terranes with unique landslide potential,

c) Distribution of all previously identified unsuitable land (due to instability), and

d) Distribution of known geologic SIAs, caves, groundwater developments, and rock material quarries.

Most of these data are available in the geologic layer of the Forest Plan data base.

Geologic Hazards

2-4 Where appropriate, conduct an assessment of the volcanic, seismic and avalanche hazards for all facilities (buildings, dams, campgrounds, bridges, etc.) that are to be constructed on the Forest.

Rock Pits and Quarries

2-5 Conduct geologic site investigations before development of any new or existing rock or earth material quarries. These investigations will address:

a) landslide hazards,

b) the potential for asbestos within the material to be developed,

c) the quantity and quality of material, and

d) the potential for underlying caves or tunnels.

2-6 Prepare quarry development plans for all sites involving more than 5,000 cubic yards of material or where significant resource damage may occur as a result of the quarry. This will include designs for final slope configuration when the material is depleted and revegetated as appropriate.

Cave Resources

2-7 Management activities near a cave, or the course of such a cave, should be designed in a way to insure protection of the cave resources until a determination can be made about the significance of the cave resource. Cave inventories and the determination of significance should be based on the process outlined by the 1988 Federal Cave Resources Protection Act.

2-8 Assure that additional sediment or contamination is not introduced into the cave system. Also assure that surface flows are not interrupted and logging slash and debris are not transported

into the cave system nor plug the cave entrance.

2-9 Avoid alteration of cave entrances or their use as disposal sites for slash, spoils or other refuse.

2-10 Limit public access to caves that could be potentially hazardous to the public, or could result in damage to cave resources. Emphasize enforcement of laws protecting caves from relic collectors and vandalism. Scientific or educational use of caves should be authorized by the Forest Supervisor.

2-11 Foster communication and cooperation between the Forest Service, caving organizations and recreationists. Information exchange may not be made public if it could lead to the degradation of sensitive caves.

Soils

3-1 Plan and implement land management activities to maintain or enhance soil productivity and stability.

Soil Erosion

3-2 With the exception of roads, permanent facilities or other projects that will permanently occupy a site, the following levels of total soil cover should be maintained at the stand level to reduce the potential of soil erosion:

Table 4-2. Soil Cover Guidelines for Projects

Soil Texture Class	Slope (%)	Minimum Total Soil Cover* (%)
Guidelines for Projects Using Tractors:		
Sandy loam or coarser	0-25 26-35	70 80
Loam or Finer	0-35	70
Guidelines for Prescribed Burning Projects:		
Sandy loam or coarser	0-25 26-45 46	60 70 80
Loam or Finer	0-35 36-60 61	50 60 70
*Soil cover consists of low growing live vegetation (12 inches high), rock fragments (greater than 1/2 inch in diameter), slash (any size) and fine organic matter (charred or not) that is in contact with the soil surface. Fine organic matter refers to the duff, litter, and twigs less than 3 inches in diameter.		

Soil Productivity

3-3 Maintain soil productivity by retaining organic material on the soil surface and by retaining organic material in the soil profile.

3-4 A minimum of 50% of the soil surface should be covered by fine organic matter following project implementation, if it is available on the site.

3-5 Maintain a minimum of 85% of the existing soil organic matter in the top 12 inches of the soil profile to allow for nutrient cycling and maintain soil productivity.

3-6 Refer to the Coarse Woody Debris (CWD) section of Biological Diversity under Biological Environment for coarse woody debris standards and guidelines designed to maintain soil fertility and provide for species needs.

3-7 Complete a Soils Resource Inventory Order 2 inventory when necessary, or field verify the Soils Resource Inventory Order 3 survey, during the planning and implementation phase of each site-disturbing or vegetative manipulation project. Develop soil conservation management

practices for each project as needed.

Water

4-1 Use the Watershed Improvement Needs (WIN) inventory and the Forest assessment process to develop and maintain a priority list of watershed restoration projects. Give priority to projects identified in the WIN inventory that will restore, protect, or enhance domestic use waters, streams supporting populations of TE&S fish, and watersheds not meeting water quality objectives. Restoration efforts should be placed on management-induced adverse impacts. "Naturally occurring" sedimentation and other adverse impacts to meeting watershed and fisheries objectives may be mitigated as opportunities arise. "Naturally occurring" sedimentation levels may not be able to be mitigated. Restoration efforts should be feasible and designed to efficiently meet management objectives.

4-2 Work with State agencies and private interests to maintain the necessary instream flows to protect beneficial uses, such as fisheries, recreation, or aesthetics.

Air Quality

General

5-1 Manage for air quality consistent with the Clean Air Act. Management activities also shall comply with the air quality standards established by the California Air Resources Board and the Siskiyou County Air Pollution Control District in California or by the Oregon Department of Environmental Quality and the Oregon State Smoke Management Plan in Oregon.

5-2 Consult with the appropriate Federal, State, and local officials in air quality research and administration to assist with the implementation of air quality standards.

Dust Abatement

5-3 A dust abatement strategy should be considered for all projects. Each strategy should address the reasonable opportunities to reduce the level of short-term and long-term dust generated from existing roads and those constructed in the future.

Smoke Management

Refer to Fire Management Standards and Guidelines.

Biological Environment

Biological Diversity

6-1 Manage to maintain the structure, composition, and function of forest, rangeland, and aquatic ecosystems within the range of natural variability. Implement management actions in a manner that complements ecological processes and promotes long-term sustainability.

6-2 Manage for biological diversity at the Forest, landscape/watershed, and site (stand) level.

6-3 Manage, restore, or recover ecosystems, as necessary, through project planning and implementation.

* 6-4 Landscape areas where little late-successional forest persists should be managed to retain late-successional patches. This standard and guideline will be applied in fifth field watersheds (20 to 200 square miles) in which Federal forest lands are currently comprised of 15% or less late-successional forest. This assessment should include all allocations in the watershed. Within such an area, all remaining late-successional stands should be protected. Protection of these stands could be modified in the future, when other portions of the watershed have recovered to the point where they could replace the ecological roles of these stands.

6-5 Monitor the diversity of ecological communities at an appropriate level. Stand and landscape level parameters should be monitored at a landscape level. Reductions or increases in a particular aspect of Forest diversity may be prescribed when needed to meet Forest objectives.

6-6 Coordinate proposed management actions within the Klamath bio-region to develop a coordinated management approach for species that move across Forest boundaries. Assure that the most recent scientific information is available for use in project planning.

6-7 Manage for a distribution and abundance of plant and animal populations that contribute to healthy, viable populations of all existing native and desirable non-native species. Maintain populations throughout their historic range. Develop strategies to determine the response of Sensitive species proposed for Endangered or Threatened listing by the United States Fish and Wildlife Service (USFWS) or by the National Marine Fisheries Service as well as indicator species to management activities.

6-8 Sensitive species: Project areas should be surveyed for the presence of Sensitive species before project implementation. If surveys cannot be conducted, project areas should be assessed for the presence and condition of Sensitive species habitat.

6-9 The shape and size of management-created vegetative openings should be within the natural range of variability for the landscape.

6-10 Where large blocks of a specific habitat type or seral stage are needed to maintain species viability, large openings may be created to provide for future habitat needs. When modifying the vegetative patterns, project planning shall consider the potential change to ecological processes and functions that would occur as a result of the management action.

6-11 Use native plant species when seeding, planting, or revegetating areas disturbed during project implementation. When native species are not available, or where non-native plant species will better meet the management goals, non-native plant species may be used. When selecting non-native species for use, avoid the introduction of species that are allelopathic, highly invasive or likely to out-compete natives for space, water and nutrients.

6-12 Collect seeds or cuttings from areas similar to the area to be planted to increase chances of plant survival and to maintain natural species and genetic composition.

6-13 Management activities should be designed to maintain or increase population levels of desirable native plant species that currently have low population levels, of desirable plant species with limited habitat distribution and of desirable plant species that have problems with disease. Examples include Port-Orford-cedar, sugar pine, Pacific yew, Brewer spruce, etc. (refer to the Timber Management section).

6-14 During project planning, consider the impacts to biological diversity parameters at the stand and landscape level. The applicable aspects of composition, structure, and function should be considered within each environmental analysis. Assess the potential changes to the following parameters that represent Forest diversity:

1) Structural Parameters –

   a. The capability of species to move through or around an area (distribution opportunities, habitat linkages and population connectivity). Identify opportunities to maintain or restore migration routes.

   b. The vegetative pattern (size and shape of the openings or patches of vegetation) within the landscape and the stand.

   c. The connectivity of the landscape to allow for species dispersal.

   d. The presence (or absence) and abundance of stand structure attributes such as snags, CWD, and hardwood components within the landscape.

2) Compositional Parameters –

   a. The potential change in the vegetation (plant associations), wildlife, or fisheries habitat.

   b. The change in habitat condition or abundance for Endangered, Threatened, and Sensitive species.

   c. The potential change to species diversity and abundance.

   d. The genetic diversity of vegetation within the project area (refer to the R5 Base Level Genetics Program Standards).

3) Functional Parameters –

   a. The habitat turnover rates in the project area.

   b. The occurrence interval and magnitude of disturbances, such as fire and pest infestations.

   c. The site's ability to cycle nutrients and maintain site productivity.

   d. The level or structure of the hardwood component.

   e. The change in fisheries habitat.

   f. The human-use patterns of the area.

6-15 All vegetative management practices should be designed to maintain a healthy forest. Conditions that promote the introduction and spread of disease, increase the risk of insect attack, or promote unacceptable fire risk should be avoided.

Coarse Woody Debris

* 6-16 A renewable supply of large down logs is critical for maintaining populations of fungi, arthropods, bryophytes, and various other organisms that use this habitat structure. Provision of CWD is also a key standard and guideline for American marten, fisher, 2 amphibians, and 2 species of vascular plants. The objective is to provide CWD well-distributed across the landscape in a manner which meets the needs of species and provides for ecological functions. Standards and guidelines would provide for appropriate CWD quantity, quality (such as species, decay stage, and size) and groups of plant associations and stand types, which can be used as a baseline for managers to develop prescriptions for landscape management. An important factor is to provide the CWD within a forest patch so that the appropriate microclimate for various organisms that use this substrate is available.

a) Manage to provide a renewable supply of large down logs well distributed across the matrix landscape in a manner that meets the needs of species and provides for ecological functions. Develop models for groups of plant associations and stand types that can be used as a baseline for developing prescriptions.

b) Until standards are developed as described above, the following guidelines apply in areas of regeneration harvests and other vegetation manipulation:

Maintain 5 to 20 pieces of CWD per acre in various states of decay. The specific amount of materials specified for retention on individual projects shall be determined by the project ID team. At a minimum, the ID team should consider the amount of materials existing on site, the amount of material needed to provide for nutrient cycling and site productivity, the denning needs of wildlife species, and the fire risk as a result of fuel material on site. Attempt to maintain these levels of CWD on site throughout the life of the project or throughout the rotation (if timber harvest is planned.)

Leave large logs, conifer and hardwood, sound and cull of at least 20 inches in diameter and about 40 cubic feet in volume when they are available. Most of the logs should be in Decay Class 3, 4 and 5 (defined in the USDA Handbook 553, page 80) with at least 2 logs per acre in decay Class 1 or 2. Do not count logs less than 12 inches in diameter or stumps as CWD. This guideline may be waived in strategic fuelbreak areas or for documented safety reasons.

Down logs should reflect the species mix of the original stand. In areas of partial harvest, the same basic guidelines should be applied, but they should be modified to reflect the timing of stand development cycles where partial harvesting is practiced.

c) CWD already on the ground should be retained and protected to the greatest extent possible form disturbance during treatment (e.g., slash burning and yarding) which might otherwise destroy the integrity of the substrate.

d) Down logs should be left within forest patches that are retained under green-tree retention guidelines in order to provide the microclimate that is appropriate for various organisms that use this substrate.

e) As with all standards and guidelines, these guidelines are meant to provide initial guidance, but further refinement will be required for specific geographic areas. This can be accomplished through planning based on watershed analysis, and the adaptive management process.

Survey and Manage Amphibians, Mammals, Bryophytes, Mollusks, Vascular Plants, Fungi, Lichens and Arthropods

*6-17 (As Amended by the Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines, January 2001)

Unmapped Late-Successional Reserves

*6-18 Standards and guidelines for unmapped LSRs and any Managed Late-Successional Areas which may be identified in the future prohibit or limit activities that otherwise appear to be within the matrix, AMA, or some other land allocation. Unmapped LSRs are identified for all LS/OG 1s and 2s within Marbled Murrelet Zone 1, around occupied marbled murrelet sites, and for 100 acres around known spotted owl activity centers. Unmapped LSRs and Managed Late-Successional Areas are identified for certain Protection Buffers.

Plant Collecting

6-19 Permits will be issued to authorize the collection of plant species for non-commercial personal-use where collection is not likely to have negative environmental effects. Were no adverse population effects are foreseen, permit requirements may be waived. Do not issue permits for TE&S species. Digging or physically removing plants should be discouraged in favor of collection of seeds and cuttings.

6-20 Permits should be issued authorizing the collection of miscellaneous forest products, such as mushrooms and plants, with cultural or economic value. Harvest strategies and implementation schedules may need to be developed for species of high commercial or personal-use interest.

6-21 Consistent with management objectives, desired species will be made available for contemporary Native American use through means that foster such use and provide for

perpetuation of the species.

Aquatic Conservation Strategy

* The Aquatic Conservation Strategy has 4 components: 1) Riparian Reserves, 2) Key Watersheds, 3) Watershed Analysis and 4) Watershed Restoration.

* 6-22 Develop criteria that are locally appropriate for the Forest to measure achievement of each Aquatic Conservation Strategy goal that is measurable.

Riparian Reserves

Refer to Management Area 10 standards and guidelines.

Key Watersheds

(*Note: Key Watersheds overlay other land allocations*.)

* 6-23 No new roads will be built in remaining unroaded portions of inventoried (RARE II) roadless areas in Key Watersheds.

* 6-24 Reduce existing system and nonsystem road mileage through decommissioning of roads. Road closures with gates or barriers do not qualify as decommissioning or a reduction in road mileage. If funding is insufficient to implement reductions, there will be no net increase in the amount of roads in Key Watersheds. That is, for each mile of new road constructed, at least one mile of road should be decommissioned, and priority given to roads that pose the greatest risks to riparian and aquatic ecosystems.

* 6-25 Key Watersheds are highest priority for watershed restoration.

* 6-26 Watershed analysis is required prior to management activities, except minor activities such as those Categorically Excluded under NEPA (and not including timber harvest).

* 6-27 Watershed analysis is required prior to timber harvest, including salvage.

6-28 Eliminate non-native fish stocking where such stocking could adversely affect native species. Also eliminate non-native stocking to reduce or eliminate direct impacts, such as those resulting from over-fishing and poaching. Coordinate these activities with the CDFG.

6-29 Conduct an ID review of both "system" and "non-system" forest roads to determine a desired road network within key watersheds. Prioritize roads for relocation and restoration or closure, based on the impact to Forest resources, the value of the riparian resources affected and the need for each road.

6-30 Establish acceptable road densities based on watershed size, landscape stability and the ability of distinct topographic areas to deliver sediment to the stream.

6-31 Evaluate the ability of existing crossings to handle 100-year flood flows. Where crossings do not meet the 100-year flood flow capacity, develop a program to upgrade those crossings or show through analysis that a lesser structure with higher risk of failure would result in less habitat damage than the larger structure with less risk of failure.

6-32 In fish-bearing streams, design new road crossings to maintain a natural stream bottom. Existing low water crossings should be evaluated for impacts on aquatic resources and re-configured as appropriate.

6-33 Develop silvicultural prescriptions that are consistent with the maintenance and/or improvement of Aquatic Conservation Strategy objectives.

6-34 Where mixed ownership exists, encourage the development of Coordinated Resource Management Plans or other cooperative agreements to achieve Aquatic Conservation Strategy objectives within key watersheds.

6-35 Common variety mineral extraction, except for channel or habitat restoration purposes, shall not be permitted within Riparian Reserves (RRs) in Key Watersheds subject to valid permitted rights.

6-36 Recommend to Federal Energy Regulatory Commission (FERC) that hydropower development not be approved within Key Watersheds.

6-37 Within Key Watersheds, require restoration and mitigation measures in mineral operating plans as needed to prevent degradation of the riparian resource. Also require a performance bond sufficient enough to restore the damaged area.

Watershed Analysis

* 6-38 Watershed analyses must be completed before initiating actions within a Key Watershed, except that in the short term, until watershed analysis can be completed, minor activities such as those that would be categorically excluded under NEPA regulations (except timber harvest) may proceed if they are consistent with Aquatic Conservation Strategy objectives and Riparian Reserves and standards and guidelines are applied. Timber harvest, including salvage, cannot occur in Key Watersheds without a watershed analysis.

* 6-39 Watershed analysis must be conducted in all non-Key Watersheds that contain roadless areas before any management activities can occur within those roadless areas.

* 6-40 Ultimately, watershed analyses should be conducted in all watersheds on federal lands as a basis for ecosystem planning and management.

* 6-41 Watershed analysis, along with a site-specific analysis and an appropriate NEPA decision-making process, is required to change RR widths in all watersheds. Regardless of stream type, changes to RRs must be based on scientifically sound reasoning and be fully justified and documented.

* 6-42 Earthflows qualify as unstable and potentially unstable areas and would be analyzed for inclusion within RRs.

* 6-43 Watershed analysis as part of the Aquatic Conservation Strategy will be an integral part of the ecosystem analysis process at the landscape/watershed level. The watershed analysis portion of this process will follow the guidance of the watershed analysis guide.

* 6-44 Watershed analysis will focus on collecting and compiling information within the watershed that is essential for making sound management decisions. It will be an analytical process, not a decision-making process with a proposed action requiring NEPA documentation.

* 6-45 In the initial years of implementation, the process for watershed analysis is expected to evolve to meet long-term goals described in these standards and guidelines. However, some projects proposed for the first few years of implementation are in areas that require watershed analysis prior to approval of the projects (i.e., Key Watersheds, RRs and inventoried roadless areas). In FYs 1994-96, watershed analysis done for these projects may be less detailed than analyses that are completed in later years. Regardless, analysis done during the initial years (FYs 1994-96) will comply with the following guidelines:

    - o The goal of the analysis is to determine whether the proposed actions are consistent with the objectives of the standard and guidelines.
    - o Existing information will be used to the greatest extent possible, with new information collected, to the maximum extent practicable, to fill crucial data gaps.
    - o Analysis will address the entire watershed, even though some areas may be analyzed at a lower level of precision, and the analysis of issues may be prioritized.
    - o Information from the analysis will flow into the NEPA documentation for specific projects, and will be used where practicalbe to facilitate Endangerd Species Act and Clean Water Act compliance.
    - o Restoration opportunities will be identified.

    As described elsewhere in these standards and guidelines, watershed analysis is an ongoing, iterative process. Watershed analyses will expand as appropriate to consider additional available information, changing conditions and potential effects associated with long-term management issues and needed actions.

Watershed Restoration

* 6-46 Watershed restoration will be an integral part of a program to aid recovery of fish habitat, riparian habitat, and water quality. Restoration will be based on watershed analysis and planning. Watershed analysis is essential to identify areas of greatest benefit-to-cost relationships for restoration opportunities and greatest likelihood of success. Watershed analysis can also be used as a medium to develop cooperative projects involving various landowners.

* 6-47 Watershed restoration should focus on removing and upgrading roads.

* 6-48 Silvicultural treatments may be used to restore large conifers in RRs.

* 6-49 Watershed restoration should restore channel complexity. In-stream structures should only be used in the short term and not as a mitigation for poor land management practices.

Sensitive Plant Species

7-1 Enhance Sensitive plant species populations and habitat to maintain reproducing, self-sustaining populations. Conduct an assessment to determine which Sensitive species are at a higher risk. Develop management strategies for higher risk Sensitive plant species first, with the intent of preventing the need for the species to become listed as T&E species.

7-2 Coordinate species maintenance and enhancement goals with other management activities on the site.

7-3 Management activities should imitate the natural ecological processes that created the Sensitive species habitat. Fire, timber management, grazing, or other activities may be used as tools for soil disturbance and removal of competing vegetation in managing the habitat.

7-4 Disturbances to plant populations and occupied habitat should be avoided during critical periods of plant growth. Individual projects shall develop project-level mitigations measures to avoid adverse impacts to Sensitive species.

Wildlife

Endangered, Threatened and Sensitive Species

8-1 Manage Federally listed T&E species and their habitat in cooperation with the appropriate lead agency. Management activities shall be compatible with the recovery of T&E plants and animals.

8-2 The Forest shall "seek to conserve Endangered and Threatened species and shall utilize its authorities in furtherance of the Endangered Species Act" (FSM 2670.11).

8-3 Review all Forest Service planned, funded, executed or permitted programs and activities for possible effects on TE&S species.

8-4 Follow the requirements for consultation and conferencing with the USFWS when T&E species, species proposed for listing by the USFWS, critical habitat or proposed critical habitat are found in a project area.

8-5 Forest personnel shall not identify (to the public) specific TE&S information that could jeopardize the welfare of the species (FSM 2671.2).

8-6 Coordinate with the California Department of Wildlife on the management of State-listed T&E species. Projects should be designed to maintain or improve State-listed species habitat.

Bald Eagle (Threatened)

8-7 Manage bald eagles and their habitat according the Pacific Bald Eagle Recovery Plan (USFWS, 1986). Survey suitable habitat to locate additional bald eagle territories.

8-8 Additional Special Habitat Management Areas will be established around newly discovered nest or roost areas. Coordinate with the USFWS and CDFG when establishing these areas.

American Peregrine Falcon (Sensitive)

8-10 Additional Special Habitat Management Areas will be established around newly discovered eyries. Coordinate with the USFWS and CDFG when establishing these areas.

Northern Spotted Owl (Threatened)

8-11 Manage spotted owl habitat consistent with direction provided in the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and the Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Species Within the Range of the Northern Spotted Owl (FSEIS).

* 8-12 Known Northern Spotted Owl Activity Centers -- Standards and guidelines in the LSR portion of these standards and guidelines specify that protection of 100 acres of the best northern spotted owl habitat will be retained as close to the nest or owl activity center as possible for all known (as of January 1, 1994) spotted owl activity centers located on regulated land (matrix and AMA). Management of stands in the matrix surrounding these areas will be designed to reduce risks of natural disturbance.

8-13 Critical habitat for the northern spotted owl was designated by the USFWS on January 15, 1992 (57 FR 1796) (Final Rule). Section 7 (a)(2) of the ESA of 1973, as amended, requires that Federal agencies consult with the USFWS on any action it authorizes, funds or carries out that may affect a listed species or its critical habitat (509 CFR 402.14). Thousands of acres of critical habitat were designated on the Forest and a considerable number of acres overlap with LSRs. The USFWS may review and revise its critical habitat designation for the northern spotted owl, based on the provisions of the ROD for the FSEIS. Until such time, however, the Forest will continue to consult with the USFWS for actions that may affect critical habitat.

Marbled Murrelet (Threatened)

8-14 Survey project areas according to USFWS-endorsed, USDA-approved protocols. The results of these surveys should be discussed in the Biological Evaluations.

* 8-15 If any marbled murrelet habitat is found to be occupied, it will become part of the LSR and managed as specified in MA 5.

8-16 Use Forest Service protocols to conduct marbled murrelet surveys during the breeding season and before implementation of proposed activities within 45 miles of the coast. Such surveys should be planned for management activities that potentially could affect marbled murrelet or their habitat.

Forest Service Sensitive Species

8-17 Known Sensitive wildlife species on the Forest include:

Peregrine Falcon
Northern goshawk
Great gray owl
Willow Flycatcher
Swainson's hawk
Greater sandhill crane
American marten
Pacific fisher
Pallid bat
Townsend's big-eared bat
Western pond turtle
Foothill yellow-legged frog
Cascade frog
Southern torrent salamander
Blue-gray taildropper
Tehama chaparral snail
Siskiyou Mountain salamander

8-18 Avoid or minimize impacts to Sensitive species where possible. If impacts cannot be avoided, analyze the potential effects on the population or its habitat within the landscape and on the

species as a whole. Projects should not jeopardize species viability or create significant trends toward the need for Federal listing (FSM 2670.22) of Sensitive species.

8-19 Collect information on Sensitive species to assess population distribution and habitat associations. Identify suitable habitat for each Sensitive species at the Forest scale. Inventory a portion of the suitable habitat each year. Assess habitat conditions at occupied sites. Based on the assessment, use appropriate management techniques to maintain or enhance habitat suitability.

8-20 *Northern goshawk:* The following interim standard and guideline is intended to provide management direction for northern goshawks within the Klamath and California Cascade Provinces. This may not be appropriate for eastside pine habitats. Although intended for application on regulated lands and in the AMA, the habitat goals described should also be considered in LSR assessments. This guideline assumes other land allocations will provide adequate foraging habitat in the general landscapes surrounding managed goshawk territories. This guideline should be integrated into the process of determining desired future conditions in ecosystem analysis at the landscape/watershed level and must be evaluated relative to the natural range of variability for a given landscape.

In this context, this guideline provides a spatial element for biological diversity. Goshawks, like many other rare, long-lived species, show great fidelity to certain spatial elements within landscapes (meadows, northerly aspects, water sources), and are unlikely to be successfully managed with an approach based solely on acres of suitable forest structure.

This interim standard and guideline applies to occupied territories, as well as existing Network Goshawk Management Areas, until surveys provide sufficient data to assess the distribution of this species, and to validate the assumption that this species is adequately provided for by large unmanaged reserves. Planned timber sale areas should be surveyed to Region 5 protocol for goshawks for a minimum of 1 season (intensive protocol) or 2 seasons (broadcast only). This guideline will be superseded by the adoption of a Conservation Strategy for Northern Goshawk and may be modified in response to new information. Implementation should be integrated into landscape-level planning for diversity, rather than approached as single-species protection.

I. Primary Nest Zone

Establish a 0.5 mile radius circle (504 acres) around the last known nest or the geometric center of a cluster of all known nests. Within this circle, maintain 40% (200 acres -- California Cascades/Eastern Klamath Province) or 60% (300 acres -- Western Klamath/California Coastal Provinces) in dense mature forest cover (>>60% CC, >>24 inches DBH [4B,C+]). The existing nest stand should be used to determine desired forest structure. This 200-acre (or 300-acre) area should include the active and historic nest stands and be as contiguous as possible relative to existing conditions. The remaining 60% (or 40%) should be managed for a habitat mosaic dominated by large-tree conditions and open understories (3N,G - 4P,N,G+), but lower canopy closure (40-60%) and small openings are allowable. Encourage the use of underburning, precommercial thinning and fuels reduction to achieve desired habitat conditions.

II. Foraging Habitat Zone

Establish a 1-mile radius circle (2,010 acres: 1,506 acres excluding Primary Nest Zone) centered on the Primary Nest Zone. Maintain 60% (900 acres) in a mosaic of mid-mature (3N,G+) to late-successional forest condition. Desired conditions include open understories, large CWD, large snags, and small openings. The remaining 40% can be younger stands with small openings. Encourage the use of underburning, fuels reduction, and thinning to achieve desired habitat conditions.

III. Disturbance

Restrict habitat-modifying activities between March 1 and August 31 within Primary Nest Zone (0.5 mile radius). Restrict loud and/or continuous noise within 0.25 miles of active nest sites during the same period. Normal levels of vehicle traffic on existing roads may be excluded in cases where goshawks appear to be habituated to such activities.

Species Associations (Guilds/Management Indicator Species, Assemblages)

8-21 Use Species Associations listed below, the most current research information, Wildlife Habitat Capability Models or Wildlife Habitat Relationships Models to assess landscape and project-level impacts to habitat conditions. Develop and update these species associations and models based on local information and new research information.

Snag Association

Downy woodpecker (Downy)
Red breasted sapsucker (Red Breasted)
Hairy woodpecker (Hairy)
Black Backed Woodpecker
White-headed woodpecker (White Hd.)
Pileated woodpecker (Pileated)
Vaux's swift

8-22 Assess the availability of snags within each landscape. Provide for an average of 5 snags per acre, in a variety of size and decay classes, within each landscape. These snags need not be equally distributed. The actual number of snags to be maintained in areas managed for timber production may vary from 2 to 5, depending on the amount of snags available within the surrounding landscape and the desired future condition of that landscape.

8-23 Maintain snag densities through the full timber rotation by providing green replacement trees to become snags of adequate size when existing snags fall. The size of snags and green trees to be retained within a given managed stand should be greater than the average diameter of the stand.

8-24 Retain snags and replacement snags in clumps when possible. Consider the susceptibility of snags to windthrow and site preparation activities. Designated wildlife trees should be protected from woodcutting and Forest management activities.

8-25 Retain snags with the largest DBH as they tend to last longer and make the best wildlife habitat.

Use Tables 4-4 and 4-5 as guidelines in ecosystem analysis and project-level planning. The relative numbers of hard and soft snags in various size classes show the habitat needs of the different cavity-association Forest wildlife species. The number of snags on a given acre will vary, depending on the site and on the number of snags within the landscape.

Table 4-4. Numbers of Snags Required per 100 acres to Support "Good" Quality Habitat for Primary Cavity-Association Species. ( ) = Number of Snags per 100 acres

Snag diameter (DBH)	General snag decay stage		Total snags by diameter class
	Hard (2-3)	Soft (4-5)	
11+		Downy (16)	(16)
15+	Red Breasted/Black Backed (45)	Hairy/White Hd. (225)	(270)
20+	Vaux's swift (200+)		(200+)
24+	Pileated (14)		(14)
		Total snags:	**(500)**

Table 4-5. Green Tree Retention for Future Snags
(to be provided in a range of the above DBH classes)

High capability	Moderate capability	Low capability
> 5 per acre	2 - 5 per acre	< 2 per acre

Mature Pine Association

White-headed Woodpecker
Flammulated Owl
Pinyon jay
Brown creeper
Pygmy nuthatch

8-26 Flammulated owls and white-headed woodpeckers are associated with mature ponderosa pine, whether in pure stands or as a component of mixed conifer forests. Pygmy nuthatches and brown creepers depend on loose bark of large diameter live and dead ponderosa pine for nest sites and foraging habitat. Where these species occur outside designated habitat for the northern spotted owl and RRs, maintain adequate number of large snags (see Standard and Guideline 8-25), particularly ponderosa pine, and large green tree replacements for future snags within the 2 species' ranges in appropriate forest types within the protection buffers. Where feasible, leave snags and replacement trees in clumps to increase avian use and reduce blowdown. If snag requirements cannot be met, then harvest must not take place.

8-27 Pinyon jays require productive cone-producing pine stands and a mosaic of shrub understory. Manage for moderate tree density of mature cone-producing pines combined with small openings of sagebrush or bitterbrush.

* 8-28 Flammulated owls are secondary cavity nesters and use cavities, in snags and live trees, created by woodpeckers or, less often that occur naturally. It is assumed that standards and guidelines for snags and green tree replacements for woodpeckers and other primary cavity-nesting species would provide for flammulated owls.

8-29 Flammulated owls require some mature tree cover and forage for moths in areas with open shrub/grass/forb understory. In addition to snag requirements, retain 3 to 4 mature trees per acre with interlocking crowns. Manage for open grass/forb understory in stands where flammulated owls are emphasized.

* 8-30 Provision of snags for other cavity-nesting species, including primary cavity-nesters, must be added to the requirements for the white-headed woodpecker.

Hardwood Association

Acorn woodpecker
Western gray squirrel

8-31 Maintain a significant component of mature, mast-producing hardwoods and oak species (for example, 10 to 35 square feet basal area per acre) in areas where oak stands occur within conifer stands. A mixture of age classes is most desirable for wildlife needs. The specific amount of hardwoods to remain at the stand level should depend on the amount of hardwoods in the surrounding landscape and the desired future condition of the area. Lands managed for low timber yields should provide greater amounts of hardwoods than lands managed for higher timber yields. Assure that there are adequate levels of hardwoods at the landscape-level.

8-32 Manage pure hardwood stands for the wildlife habitat values within those stands.

8-33 Manage to improve or maintain the presence of Oregon white oak stands. Low intensity prescribed fire may be one tool that will benefit white oak stands.

Riparian Association

River/Stream

Rainbow trout
Steelhead
Tailed frog
Cascades frog
American dipper
Northern water shrew
Long-tailed bole

Marsh/Lake/Pond

Northern red-legged frog
Western pond turtle

Refer also to Riparian Reserves Management Area 10 and the fisheries section in the Forestwide Standards and Guidelines.

8-34 Manage to promote desirable emergent vegetation within marshes, ponds and lakes.

Grassland/Shrub-Steppe Association

Pronghorn
Montane vole
Swainson's hawk
Sage thrasher
Loggerhead shrike
Burrowing owl

8-35 Manage for widely-spaced trees (mostly western juniper) at 3 trees or less per 40 acres. Prevent sagebrush encroachment into grassland vegetation within the habitat type.

8-36 Manage to increase grass/forb component throughout this habitat type through manipulation of grazing and seasonal flooding regimes. Manage to reduce occurrence of cheatgrass and rabbitbrush and retain the mosaic of sage stands and grassy or seasonally flooded openings.

8-37 Restrict activities within 1/4-mile of active Swainson's hawk nests during the nesting season (April 15 to August 15) with the exception of allowing use by highway-legal motor vehicles on system roads in the Butte Valley National Grassland during the nesting season.

Down Woody Material

Refer to the CWD section of Biological Diversity.

Cliff, Cave and Talus

8-38 Design individual projects to protect the value of unique wildlife habitats such as cliffs, caves and talus slopes.

* 8-39 This provision is intended to apply in matrix forests (regulated land) and in the AMA. Conduct surveys of crevices in caves, mines and abandoned wooden bridges and buildings for the presence of roosting bats, including fringed *myotis*, silver-haired bats, long-eared *myotis*, long-legged *myotis* and pallid bats. For the purposes of this standard and guideline, caves are defined as in the Federal Cave Resources Protection Act of 1988. If bats are found, identify the species using the site and determine for what purpose bats are using it. As an interim measure, timber harvest is prohibited within 250 feet of sites containing bats. Protect the site from destruction, vandalism, disturbance from road construction or blasting, or any other activity that could change cave or mine temperatures or drainage patterns. The size of the buffer, and types of activities allowed within the buffer, may be modified through the standards developed for the specific site. Retention of abandoned bridges or buildings must be made contingent on safety concerns.

* 8-40 When Townsend's big-eared bats are found occupying caves or mines on Federal land, the appropriate agency should be notified, and management prescriptions for that site should include special consideration for potential impacts on this species.

8-41 Coordinate cave inventories with wildlife biologists to reduce disturbance to bats. Limit public access to caves where such access could be potentially detrimental to bat populations.

Meadow

8-42 Maintain or enhance meadows where appropriate. Prevent conifer encroachment into existing meadows using cost-effective techniques.

8-43 Manage adjacent forested areas to provide cover for wildlife species that forage in meadows. Proposed management actions should be evaluated as part of the environmental analysis process. Proposed actions also should consider such factors as the availability of meadow habitat within the landscape and the known or suspected use of the area by wildlife (most

notably deer, elk and great gray owl).

Forest Emphasis Species

Black Bear

8-44 Manage "open" road densities to reduce the level of human interaction with bears during critical times of the year.

8-45 Manage to increase mast-producing oaks capable of supporting the existing bear population.

8-46 Maintain large snags (greater than 36 inches DBH) within project areas to provide denning opportunities.

Black-Tailed Deer

8-47 Design projects to improve, create or maintain a mix of forage and cover conditions that will maintain or increase deer populations. Use a range of management tools, including prescribed burning, thinning, and timber harvest to create openings for black tailed deer populations.

8-48 Provide high quality wintering, fawning/rearing and migration habitat where such habitat has been identified by the CDFG. Within wintering habitat, forage areas should simulate existing patches with distance to cover not exceeding 300 yards.

8-49 Emphasize projects that maintain the health and vigor of browse species and mast-producing oaks. Forage areas in fawning/rearing areas should be smaller openings, with the distance to cover not exceeding 150 yards.

8-50 Close roads when necessary to limit activities that inhibit deer use of quality foraging, fawning/rearing or wintering areas. Maintain or establish roadside screening along open roads in areas important for migration, fawning/rearing or concentrated seasonal use.

8-51 Manage key winter and spring use areas to provide a good forage to cover habitat ratio.

Roosevelt Elk

8-52 Develop a comprehensive management strategy in consultation with the CDFG. Project planning proposals should include consideration of habitat enhancement, enhancement and protection of key use areas and open road management. Manage for a high habitat rating.

8-53 Manage key winter and spring use areas to provide a good forage to cover habitat ratio.

8-54 When appropriate, close roads to limit activities that inhibit elk use of quality foraging, fawning/rearing or wintering areas.

8-55 Work with Forest public information specialists and CDFG to increase public awareness and support for the elk program.

Miscellaneous Wildlife Sites

8-56 Locate and manage habitat sites that have special value for wildlife or botanical resources and are not otherwise provided for in the standards and guidelines. Appropriate management should be determined at the site-level through the environmental analysis process.

8-57 Coordinate wildlife transplants, introductions, or reintroductions with other agencies and the public.

8-58 Manage for a balance of early successional species in areas where fire maintained ecosystems predominate. These ecosystems include eastside pine, hardwood, and chaparral habitats.

8-59 Manage vegetative conditions Forestwide to support population levels of game species as agreed to in jointly developed wildlife management plans. Emphasize projects that will improve game animal habitats and result in increased population levels.

8-60 Coordinate with the CDFG on the reintroduction of desired species.

Fisheries

Refer to the Biological Diversity and the Aquatic Conservation Strategy sections and Management Area 10 for other standards and guidelines that also apply to aquatic species management.

9-1 Streams and lakes will be managed to maintain or improve habitat for aquatic species, especially TE&S species.

9-2 Inventories should be maintained and updated to:

1) Assess fisheries and amphibian habitat capability,
2) Monitor changes due to ecological or management-related events,
3) Identify opportunities for habitat improvement and restoration.

9-3 Restoration of aquatic habitat will be based on watershed-scale analysis and planning.

9-4 Project-level planning should review the opportunities available to improve or maintain aquatic habitat. Through the interdisciplinary process, the cause of the problem should be identified and treated as well as the effects. In-stream restoration measures are usually considered short-term and will be accompanied by riparian and upslope restoration to achieve long-term watershed restoration. Prioritize projects as follows:

1) Protection vs. mitigation.
2) Long-term vs. short-term.
3) Benefits TE&S species.
4) Benefits multi-species (flora and fauna).
5) Benefits other species.

9-5 Enhancement projects should be monitored to evaluate their effectiveness in meeting the desired conditions.

9-6 Work to increase public awareness and appreciation of aquatic resources.

9-7 Work with state, Federal, tribal and community groups to optimize efforts to protect, maintain, and improve aquatic resources, especially anadromous fish species.

9-8 Use the Riparian Species Associations for River/Stream and Marsh/Lake/Pond listed in the Wildlife section as well as information on TE&S species to assess the condition of the larger aquatic system. The species in the Associations may change over time as more information becomes available.