

ROD

Appendix A



**Land Allocations
and Associated
Standards and Guidelines**

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Appendix A

Introduction

This document is attached to and a part of the *Record of Decision for the Sierra Nevada Forest Plan Amendment Project, 2001*. The purpose of this appendix is to provide a tool for Forest Service land managers, other agencies, and the public in implementing the direction contained in the Record of Decision (ROD).

Appendix A has two parts: Part I describes the Record of Decision's overall management strategies to address the five problem areas. These strategies are linked to the land allocations and the standards and guidelines for management in these allocations, which are presented in Part II.

I. Management Strategies to Address the Five Problem Areas

A. Conservation Strategy for Old Forest Ecosystems and Associated Species

The old forest and associated species conservation strategy in this decision aims to provide environmental conditions that are likely to maintain viable populations of old forest associated species, most specifically the California spotted owl, well-distributed across Sierra Nevada national forests. The strategy seeks to maintain existing suitable California spotted owl habitat to stabilize current population declines.

This decision applies a landscape-scale strategy of land allocations, combined with stand-level management standards and guidelines, to conserve old forest ecosystems and their associated wildlife species. The foundation of the strategy is based on providing and enhancing fundamental components of California spotted owl habitat, such as complex stand structures at nest sites, home ranges having moderate to high levels of tree canopy cover concentrated near nest sites, and habitat for primary prey species, particularly the northern flying squirrel. The landscape strategy accomplishes this goal at multiple spatial scales by: (1) protecting and managing old forest emphasis areas to provide high quality California spotted owl habitat, (2) protecting and managing spotted owl home range core areas to provide moderate to high levels of tree canopy cover, (3) managing general forest areas to maintain and increase amounts of suitable spotted owl habitat, (4) protecting all patches larger than 1 acre of high quality old forest characterized by large trees and high canopy closure (stands classified as CWHR 5M, 5D, and 6), and (5) addressing fire hazard and risk by strategically locating fuels treatments in the urban wildland intermix zone and in old forest emphasis areas characterized by high hazard and risk. This landscape strategy also includes the southern Sierra fisher conservation area, which is managed to support habitat needs of the Pacific fisher.

The fuels management strategy is integrated with the old forest associated species conservation strategy. The sections below briefly summarize how protected activity centers (PACs), the southern Sierra fisher conservation area, old forest emphasis areas, California spotted owl home range core areas, the urban wildland intermix zone, and general forest are managed to conserve habitat for old forest associated species while addressing needs for fire and fuels management. Management direction for each land allocation is tailored to factors that consider environmental conditions believed necessary to sustain old forest associated species balanced with action necessary to reduce risk of severe wildland fire effects and the need to protect human life and property.

This old forest ecosystem and associated species conservation strategy applies a “lighter hand” in managing vegetation and fuels to reduce uncertainty associated with the impacts of these activities on old forest ecosystems and habitat for associated species. Direction for mechanical fuels treatments is designed to conserve key elements of old forest habitat and provide effective fuels reduction treatments. The land allocations and their associated standards and guidelines, as well as standards and guidelines applied forest-wide (in other words, across all land allocations), provide old forest conditions and habitat for associated species at both patch (or stand) and landscape scales.

The following sections briefly summarize management direction related to the old forest and associated species conservation strategy. A complete description of all standards and guidelines pertaining to old forest and associated species conservation is presented in Part II of this Appendix.

Forest-wide Management Direction

The decision includes standards and guidelines that pertain to fuels treatments within specific vegetation conditions across the Sierra Nevada landscape, regardless of the land allocation in which they occur (with one exception noted below). These vegetation conditions include: (1) plantations, (2) brush and shrub patches, and (3) forest stands larger than 1 acre with large overstory trees (average tree diameter 24 inches diameter at breast height (dbh) or greater) and moderate- to dense- canopy cover (identified as California Wildlife Habitat Relationships (CWHR) classes 5M, 5D, and 6) outside the defense zone of the urban wildland intermix zone. (The defense zone is the inner 0.25-mile buffer of the urban wildland intermix zone: refer to the description of the fire and fuels strategy for this alternative.)

Plantations. Direction is to apply silvicultural and fuel reduction treatments in plantations to accelerate development of old forest characteristics, increase stand heterogeneity, and reduce the risk of wildfire loss.

Brush and Shrub Patches. Direction is to design mechanical fuels treatments to remove material to minimize wildland fire effects.

Forest stands larger than 1 acre identified as CWHR Classes 5M, 5D, and 6 outside the defense zone of the urban wildland intermix zone: Management direction is to reduce fuels while maintaining the structural characteristics of these stands by limiting the intensity and extent of fuel treatments

Land Allocations

This section highlights management direction designed to protect and perpetuate old forest ecosystems and habitat for old forest associated species in each land allocation. Management in riparian areas (refer to the aquatic management strategy in Section B below) also contributes to meeting the goals of the old forest and associated species conservation strategy.

Protected Activity Centers (PACs) for California Spotted Owl, Northern Goshawk, Great Gray Owls, and Den Sites for Fisher and Marten

A specified area will be delineated to protect all known nesting, roosting, and denning sites as follows:

- **California spotted owl nest and roost sites:** 300 acres of the best available habitat surrounding each owl activity center detected since 1986, arranged in as compact a unit as possible; (Activity centers are based on documented nest sites, most recently known roost sites, or a central point based on repeated daytime detections.)

- **Northern goshawk breeding sites:** 200 acres of the best available forested habitat surrounding nest sites (or, if the nest cannot be located, the location of territorial adults or recently fledged juveniles during the fledgling dependency period) in the largest contiguous blocks possible;
- **Great gray owl nest sites:** 50 acres of the best available forested habitat plus adjacent meadow habitat surrounding nest sites;
- **Fisher den sites:** 700 acres of the highest quality habitat in a compact arrangement surrounding den sites in the largest, most contiguous blocks available; and
- **Marten den sites:** 100 acres of the highest quality habitat surrounding den sites, arranged in as compact a unit as possible.

Limited operating periods (LOPs) are applied to PACs and den sites during nesting and denning seasons to protect breeding adults and their offspring. Most vegetation management activities are prohibited during LOPs, except where surveys confirm that individual owls or goshawks are not nesting.

Fuel treatments conducted in PACs outside the nesting season or den sites are designed to enhance or maintain long-term habitat conditions. PACs in the defense zone of urban wildland intermix zone are managed to maintain suitable owl habitat while addressing the need to reduce fire hazards near human communities. PACs in areas outside the defense zone of the urban wildland intermix zone are managed to maintain existing suitable owl habitat.

Standards and guidelines limit fuel treatments to no more than 10 percent of PACs each decade across the 11 Sierra Nevada national forests, with no more than 5 percent of PACs treated during any given year. The standard would be waived for treatments associated with a formal research study developed in cooperation with the Forest Service Pacific Southwest Research Station.

Old Forest Emphasis Areas

This decision includes a network of old forest emphasis areas, comprising approximately 40 percent of national forest lands in the Sierra Nevada. Old forest emphasis areas are larger landscapes that contain the majority of existing old forest stands and they are managed to develop larger aggregations of old forest over time. Management in old forest emphasis areas emphasizes reducing hazardous fuel conditions and re-introducing fire. Prescribed fire is emphasized to reduce fuels and meet ecological goals in old forest emphasis areas. Areas of high fire hazard and risk have highest priority for prescribed fire treatments.

California Spotted Owl Home Range Core Areas

California spotted owl home range core areas surround owl activity centers. Home range core area sizes vary by national forest as specified in the standards and guidelines (Part II of this Appendix). Home range core areas include the 300-acre PAC.

Management objectives for California spotted owl home range core areas are identical to those described in the preceding section for old forest emphasis areas. This direction applies to California spotted owl home range core areas except where home range core areas overlap with the urban wildland intermix zone. (Refer to Part II of this Appendix for details on applying standards and guidelines in overlapping land allocations.)

Southern Sierra Fisher Conservation Area

The southern Sierra fisher conservation area encompasses the known occupied range of the Pacific fisher in the Sierra Nevada. This consists of an elevational band from 4,500 feet to 8,000 feet on the Sierra and Sequoia National Forests. Direction is to manage 5,000- to 10,000-acre planning watersheds to support fisher habitat.

General Forest

The general forest is a land allocation that encompasses lands outside the allocations described in the preceding sections (and includes several other allocations in existing forest plans). The general forest is comprised of national forest lands that lie outside wilderness areas, wild and scenic river areas, PACs, den sites, southern Sierra fisher conservation area, old forest emphasis areas, California spotted owl home range core areas, and the urban wildland intermix zone. Management direction is to: (1) reduce hazardous fuels to effectively modify wildland fire behavior to reduce uncharacteristically severe wildland fire effects and (2) increase the numbers of large trees and the distribution and connectivity of old forests across landscapes.

Stand Structure

This decision includes a suite of forest-wide stand structure standards and guidelines pertaining to large trees, canopy cover, snags, and large down wood that apply in all land allocations. These stand structure standards and guidelines are detailed in Part II, Section B, *Forest-wide Standards and Guidelines* of this Appendix.

Habitat for Old Forest Associated Species at the Landscape Scale

The old forest and associated species conservation strategy in this decision is designed to maintain and develop habitat capable of supporting existing old forest associated populations (particularly the California spotted owl) at landscape scales and stabilizing current California spotted owl population declines. The strategy provides direction for managing old forest emphasis areas, California spotted owl home range core areas, and forest stands comprised of large trees and moderate to dense canopy levels to provide high quality California spotted owl habitat. The general forest is managed to provide suitable spotted owl habitat. This strategy also provides three critical elements for Pacific fisher conservation: (1) it provides management direction for the southern Sierra fisher conservation area to support fisher habitat requirements; (2) it provides for suitable habitat linkages between southern and northern Sierra Nevada Pacific fisher populations; and (3) it provides suitable habitat for possible Pacific fisher range expansion northward, allowing this species to reoccupy its historical range, and for reintroductions.

Fuel Treatments

Fuel treatments include both prescribed fire and mechanical thinning to affect fire behavior and reduce wildland fire severity. This decision has forest-wide direction to establish and maintain strategically placed area treatments described in the fire and fuels strategy. Areas of high hazard and risk in pine and mixed conifer forest types within the urban wildland intermix zone have first priority for treatments to achieve fire and fuels objectives. The goal is to strategically treat fuels across 30 to 40 percent of each landscape with the overall objective of reducing uncharacteristically severe wildland fire effects across the entire landscape.

B. Aquatic Management Strategy

An Overview

A primary purpose of the Sierra Nevada Forest Plan Amendment is to develop regional direction that will protect and restore aquatic, riparian, and meadow ecosystems and provide for the viability of native plant and animal species associated with these ecosystems. This regional direction is represented by an array of features that, in their entirety, constitute an aquatic management strategy (AMS) for the Sierra Nevada. The fundamental principle of the AMS is to retain, restore, and protect the processes and landforms that provide habitat for aquatic and riparian-dependent organisms, and produce and deliver high-quality waters for which the national forests were established. Accomplishment of these objectives will be achieved through a combination of tactics and policies that are intended to work collectively.

In order for the AMS to function as a comprehensive strategy there are a suite of interrelated actions that work together to manage and conserve aquatic habitats. These actions include:

- a description of the desired condition of aquatic, riparian, and meadow habitats developed from the AMS goals;
- an array of land allocations (such as critical aquatic refuges and riparian areas) that delineate aquatic, riparian, and meadow habitats and emphasize specific actions in these areas;
- a set of standards and guidelines that specify appropriate land uses and activities within different land allocations;
- ecosystem analysis that: (1) enables managers to collect and evaluate relevant data and information over nested geographic zones (such as watersheds within river basins) for the purpose of considering current landscape conditions and (2) results in appropriate, site-specific management decisions, including restoration of degraded areas; and
- an adaptive management program that includes monitoring and research activities intended to assess planned management activities and provide information needed to adjust future management activities, as appropriate.

The AMS is intended to provide a regional framework of land management measures that will provide for improved conditions in aquatic habitats throughout the Sierra Nevada. This strategy, however, must be understood as a general regional framework that sets broad policy direction for managing aquatic habitats. It is not practical to expect a regional framework strategy to be capable of addressing site-specific issues given the wide range of variability in Sierra Nevada aquatic, riparian, and meadow habitats. Site-specific adjustments to the overarching provisions of this AMS will be provided through project level analysis and ensuing decisions that are informed by landscape analyses.

The AMS provides a comprehensive, Sierra Nevada-wide approach, based on maintaining and restoring watershed processes that form and maintain habitats and yield high-quality water. The strategy explicitly recognizes that Sierra Nevada landscapes are dynamic and subject to frequent large disturbances, such as fire and flooding. The AMS provides management direction that is intended to maintain these disturbances within natural ranges of variability at the watershed scale.

While the AMS recognizes that most Sierra Nevada watersheds are currently outside natural ranges of variability in at least some attributes, it also recognizes that many of these trends can be reversed. For some watersheds, recovery may take decades or even a century or more; some watersheds may not be

recoverable. However, implementing the AMS is expected to eventually reverse downward condition trends in most watersheds.

The Record of Decision includes core elements of the AMS, including the adaptive management strategy for aquatic and riparian ecosystems. This section presents detailed direction pertaining to the following elements of the AMS:

- aquatic management strategy (AMS) goals;
- riparian conservation areas (RCAs) and critical aquatic refuges (CARs)
- riparian conservation objectives (RCOs) and their suites of standard and guidelines for project level analysis; and
- direction pertaining to anadromous fish-producing watersheds on the Lassen National Forest.

Aquatic Management Strategy Goals

The aquatic management strategy goals (Figure I.B.1) are neither prescriptions nor standards, but endpoints toward which management will move watershed processes and functions, habitats, attributes and populations. The goals provide a broad, comprehensive framework for establishing desired future conditions for analysis at the river basin, watershed, and landscape scale (ecosystem analysis). Moving ecosystem conditions toward these goals will restore and maintain the physical, chemical and biological integrity of the region’s waters as mandated by the Clean Water Act, and will support the Forest Service’s mission to provide habitat for riparian- and aquatic-dependent species under the National Forest Management Act, Organic Act, Safe Drinking Water Act, Endangered Species Act, and Electric Consumers Protection Act.

Figure I.B.1. Aquatic Management Strategy Goals

1. **Water Quality:** Maintain and restore water quality to meet goals of the Clean Water Act and Safe Drinking Water Act, providing water that is fishable, swimmable, and suitable for drinking after normal treatment.

2. **Species Viability:** Maintain and restore habitat to support viable populations of native and desired non-native plant, invertebrate, and vertebrate riparian-dependent species. Prevent new introductions of invasive species. Where invasive species are adversely affecting the viability of native species, work cooperatively with appropriate State and Federal wildlife agencies to reduce impacts to native populations.

3. **Plant and Animal Community Diversity:** Maintain and restore the species composition and structural diversity of plant and animal communities in riparian areas, wetlands, and meadows to provide desired habitats and ecological functions.

4. **Special Habitats:** Maintain and restore the distribution and health of biotic communities in special aquatic habitats (such as springs, seeps, vernal pools, fens, bogs, and marshes) to perpetuate their unique functions and biological diversity.

5. **Watershed Connectivity:** Maintain and restore spatial and temporal connectivity for aquatic and riparian species within and between watersheds to provide physically, chemically and biologically unobstructed movement for their survival, migration and reproduction.

6. **Floodplains and Water Tables:** Maintain and restore the connections of floodplains, channels, and water tables to distribute flood flows and sustain diverse habitats.

7. **Watershed Condition:** Maintain and restore soils with favorable infiltration characteristics and diverse vegetative cover to absorb and filter precipitation and to sustain favorable conditions of stream flows.

8. **Streamflow Patterns and Sediment Regimes:** Maintain and restore in-stream flows sufficient to sustain desired conditions of riparian, aquatic, wetland, and meadow habitats and keep sediment regimes as close as possible to those with which aquatic and riparian biota evolved.

9. **Stream Banks and Shorelines:** Maintain and restore the physical structure and condition of stream banks and shorelines to minimize erosion and sustain desired habitat diversity.

The Record of Decision identifies several broad scale actions to help meet the ACS goals. These actions include: (1) developing appropriate conservation plans with other State and Federal agencies for vulnerable plant and animal riparian- and aquatic-dependent species, (2) implementing relevant recovery plans for aquatic- and riparian-dependent threatened or endangered species, and (3) minimizing degradation of habitats for vulnerable species.

Riparian Conservation Areas

Riparian conservation areas (RCAs) are land allocations that are managed to maintain or restore the structure and function of aquatic, riparian and meadow ecosystems. The intent of management direction for RCAs is to (1) preserve, enhance, and restore habitat for riparian- and aquatic-dependent species; (2) ensure that water quality is maintained or restored; (3) enhance habitat conservation for species associated with the transition zone between upslope and riparian areas; and (4) provide greater connectivity within the watershed. RCAs are delineated and managed consistent with riparian conservation objectives as described in the standards and guidelines in Part II of this Appendix.

Critical Aquatic Refuges

CARs are small subwatersheds that contain either:

- known locations of threatened, endangered, or sensitive species,
- highly vulnerable populations of native plant or animal species, or
- localized populations of rare native aquatic- or riparian-dependent plant or animal species.

Vicinity maps for CARS are included in Appendix I of the Final Environmental Impact Statement (FEIS) for the Sierra Nevada Forest Plan Amendment Project. As part of landscape analysis, the boundaries of CARs may be refined based on the findings from conservation assessments or verification of the presence and condition of habitat for threatened, endangered, and sensitive species. As information is gathered through landscape analysis, additional CARs may be added by individual national forests.

The primary management goal for CARs is to preserve, enhance, restore or connect habitats distributed across the landscape for sensitive or listed species to contribute to their viability and recovery. In many cases, CARs support the best remaining populations of native fish, amphibian, and plant species with substantially reduced distributions elsewhere in the Sierra Nevada. CARs are managed as RCAs; standards and guidelines that apply to RCAs also apply in CARs.

CARs have highest priority for landscape analysis. Landscape analyses will evaluate existing activities and identify projects for preserving, enhancing, restoring, and connecting habitats for sensitive or listed species. (See Section F. *Ecosystem Analysis* of Part I of this Appendix.)

Existing activities that are determined to be inconsistent with RCOs may be mitigated or removed to ensure consistency with RCOs. New projects and activities will be consistent with RCOs. New activities, such as development of dams or diversions or mineral extraction, are generally not appropriate within CARs. CARs also have high priority for watershed restoration activities. CAR's will be evaluated and proposed for withdrawal from mineral entry, as appropriate.

Riparian Conservation Objectives

The riparian conservation objectives (RCOs) provide a checklist for evaluating whether a proposed activity is consistent with the desired conditions described by the AMS goals.

Evaluating New Projects

Site-specific project-level analyses will be conducted to determine the activities that can occur within RCAs and CARs. The analyses will assure consistency with RCOs and associated standards and guidelines. (RCOs and their associated standards and guidelines are described in Part II of this Appendix.)

RCOs and their associated standards and guidelines will be analyzed for projects located within RCAs or CARs. The analysis will consider physical factors (such as soil characteristics, geology, slope, and stream characteristics) and biological factors (such as aquatic- riparian-dependent species present, their habitat needs, and the capability of the existing environment to provide needed habitat). RCA widths (specified in the standards and guidelines in Part II of this Appendix) may be adjusted at the project level if a landscape analysis has been completed and the site-specific RCO analysis demonstrates a need for different widths.

For example, if a site-specific analysis for a fuels management project proposed that a strategically placed area treatments should cross a riparian conservation area, the local watershed/aquatic specialist(s) would conduct an assessment to determine what aspects of the AMS goals would be affected. The outcome of this project area assessment would be a recommendation regarding the appropriate type and level of activities that could occur within the RCA. The assessment would include a written description of the extent of the area considered, its link to adjoining landscapes, presence of special habitats including critical aquatic refuges, and special needs of riparian- and aquatic-dependent species or communities. The assessment would describe how the proposed management activities were consistent with the RCOs and contribute toward meeting the ACS goals. The assessment could include recommendations for modifying project activities, maintaining specific levels of ground cover, requiring specific forest stand composition and structure to provide shade or down wood, or requiring limited operating periods.

Maintenance activities for existing uses in RCAs, including maintenance of developed recreation sites, roads, trails, or administrative sites and removal of hazards to public safety, are exempt from the site-specific RCO assessment process.

Reviewing Existing Uses and Activities

All existing activities or uses will be reviewed for consistency with riparian conservation objectives within 5 years after this ROD is signed. Several concurrent processes will be used to achieve this objective:

- Conservation assessments for the foothill and mountain yellow legged frogs, Cascade frog, Yosemite toad, northern leopard frog, and willow flycatcher will be completed within 1 year after the ROD is signed.
- Activities operating under permit systems, such as grazing allotments, guide services, or ski areas, will be reviewed for consistency with riparian conservation objectives when the permit is reissued or reviewed.

- Each national forest will assess maintenance level 3, 4, and 5 roads in accordance with the national roads analysis system within the next 2 years.
- Other existing uses and activities, including recreational trails, developed and dispersed recreation sites or areas, and maintenance level 1 and 2 roads, will be reviewed during the landscape analysis process described in Section E of this Part.

Information gathered through landscape analysis will identify potential conflicts across landscapes and document the need for corrective actions or mitigation measures. Landscape analysis will be used to develop a list of possible restoration actions: existing uses will be evaluated to assess their consistency with ACS goals across the landscape and riparian conservation objectives at the project level.

Peer Review

For vegetation treatments or other activities proposed within CARs and RCAs that are likely to significantly affect aquatic resources, a peer review process will be utilized. A project will be peer reviewed if it proposes ground-disturbing activities in more than 25 percent of the RCA or more than 15 percent of a CAR.

The peer review team will consist of at least two off-forest riparian specialists. (Riparian specialists include hydrologists, fisheries biologists, botanists, wildlife biologists, and soil scientists.) Peer reviews will also be provided to scientists from the Pacific Southwest Research Station and representatives from other State or Federal agencies, such as the Environmental Protection Agency, Regional Water Quality Control Board, California Department of Fish and Game or the U.S. Fish and Wildlife Service. The peer review is designed to assure consistent interpretation and application of the standards and guidelines.

The peer review process will primarily be a “paper” review process. The local riparian specialist will prepare a report identifying the project or activity proposed within the CAR or RCA, how the riparian conservation objectives are being met, and how the project will contribute to AMS goals for the landscape. The documentation should be site-specific, identifying water quality concerns (including beneficial uses for the affected water body), species and habitat concerns within the project area, and the project’s relationship to adjacent landscapes. The reviewers will review the documentation and comment on whether the proponent has adequately addressed all relevant riparian conservation objectives and if the course of action seems prudent. The reviewers will have 30 days to return their assessment. Suggestions made in the peer review may be used to modify the proposal. The peer review will become part of the environmental analysis planning record.

Long-Term Strategy for Anadromous Fish-Producing Watersheds (Lassen National Forest)

Since 1995, an interim aquatic management strategy for anadromous fish-producing watersheds (known as PACFISH; USDA and USDI 1995) has been in place on the Lassen National Forest. This interim direction applies to National Forest System lands within the watersheds of Deer, Mill, Antelope, Battle, and Butte Creeks. The long-term strategy, which is presented in Appendix I of the FEIS and is available from the Lassen National Forest, replaces the interim strategy. As part of this strategy, National Forest System lands within the five watersheds are designated and managed as key watersheds for anadromous fish. Key watersheds provide a pattern of protection across the landscape where anadromous fish habitat receives special attention and treatment.

C. Fire and Fuels Management Strategy

This decision applies a strategic approach for locating fuels treatments across broad landscapes. Urban wildland intermix zones have highest priority for fuels treatments; fuels in the inner defense zone of the urban wildland intermix zone are more intensively treated to prevent the loss of life and property. Outside the defense zone, but within the threat zone of the urban intermix, forest fuels are treated in a less intensive manner in PACs and in stands comprised of large trees with moderate to dense canopy cover (as described in the standards and guidelines specific to these areas in Part II of this Appendix). Outside the urban wildland intermix zone, old forest emphasis areas characterized by high fire hazard and risk have the next highest priority for fuels treatments, followed by general forest areas with high fire hazard and risk. Fuel treatments within sensitive habitats are approached in a more cautious manner: the intensity of treatments is limited within old forest emphasis areas and California spotted owl home range core areas (in addition to PACs and stands characterized by large trees and moderate- to dense canopy cover).

Urban Wildland Intermix Zone

The urban wildland intermix zone is an area where human habitation is mixed with areas of flammable wildland vegetation. It extends out from the edge of developed private land into Federal, private, and State jurisdictions. The urban wildland intermix zone extends 1 ½ miles out from areas that have residences, commercial buildings or administrative sites with facilities. It is comprised of two zones: an inner ¼-mile wide buffer (the defense zone) and an outer 1¼ -mile wide buffer (the threat zone). The actual boundaries of the urban wildland intermix zone are determined locally, based on the actual distribution of structures and communities adjacent to or intermixed with national forest lands. Strategic landscape features, such as roads, changes in fuels types, and topography, are used in delineating the physical boundary of the urban wildland intermix zone.

Fuel reduction treatments are designed to protect human communities from wildland fires as well as minimize the spread of fires that might originate in urban areas. The management objective in the urban wildland intermix zone is to enhance fire suppression capabilities by modifying fire behavior inside the zone and providing a safe and effective area for possible future fire suppression activities.

Management direction for urban wildland intermix zones is to:

- design fuel treatments to provide a buffer between developed areas and wildlands;
- design and distribute treatments to increase the efficiency of firefighting efforts and reduce risks to firefighters, the public, facilities and structures, and natural resources;
- determine the distribution, schedule, and types of fuel reduction treatments through collaboration with local agencies, air regulators, groups, and individuals; and
- place the highest density and intensity of treatments in developed areas within the urban wildland intermix zone.

Within the urban wildland intermix zone, areas are treated to move toward or maintain the following desired conditions:

- Fuel conditions allow for efficient and safe suppression of all wildland fire ignitions. Fires are controlled through initial attack under all but the most severe weather conditions.
- Under high fire weather conditions, wildland fire behavior in treated areas is characterized as follows: (1) flame lengths at the head of the fire are less than four feet; (2) the rate of spread at

the head of the fire is reduced to at least 50 percent of pre-treatment levels for a minimum of five years; (3) hazards to firefighters are reduced by keeping snag levels to two per acre (outside of California spotted owl and Northern goshawk PACs and forest carnivore den site buffers); and (4) production rates for fireline construction are doubled from pre-treatment levels.

Table I.C.1. Urban wildland intermix defense zone: Treat to these desired stand conditions (over 90 percent of the stand area).

Vegetation (foliar moisture 80%)	Canopy Cover <i>If the canopy cover for the dominate and co-dominate trees fall range between:</i>	Crown Bulk Density (Kg/m ³) estimates	Live Crown Base Height (Min average in feet)	Surface Fire
Timber (3S,P,4S,P)	40% or less	.05	15	Average of 4 feet or less
Timber (3P,N,4P,N)	40-70 %	.05 to .15	20	Average of 4 feet or less
Timber (3N,G,4N,G)	70%	.15	25	Average of 4 feet or less

Table I.C.2. Urban wildland intermix threat zone: Treat to these desired stand conditions (over 85 percent of the stand area).

Vegetation (foliar moisture 80%)	Canopy Cover <i>If the canopy cover for the dominate and co-dominate trees fall range between:</i>	Crown Bulk Density (Kg/m ³)	Live Crown Base Height (Min average in feet)	Surface Fire
Timber	40% or less	.05	15	Average of 6 feet or less
Timber	40-70 %	.05 to .15	20	Average of 6 feet or less
Timber	70%	.15	25	Average of 6 feet or less

*Stand size is based on 100 acres. Crown base height may vary by slope and modeled fire behavior.

**The numbers shown for live crown base height in the above tables were based on the following assumptions: 0 percent slope; mid-flame wind speed of 5 miles per hour; 3 percent fuel moisture for 1-hour fuels; 4 percent fuel moisture for 10-hour fuels; 5 percent fuel moisture for 100-hour fuels; and 70 percent live foliar moisture.

Landscape Fuels Management

The fuels treatment strategies in this ROD are designed to reintroduce fire, reduce fuel levels, and mitigate the consequences of large damaging wildfires. These strategies allow fire managers to control fires and set priorities that protect fire fighters, the public, property, and natural resources.

A landscape fuels strategy must provide for spatial extent and temporal scale. Spatial extent is defined by the extent and intensity of wildland fires that one is attempting to influence; the temporal scale is the time frame in which one must operate to accomplish the fuels treatments. In general, landscape-level fuels treatment strategies are designed to limit wildland fire extent, modify fire behavior, and improve ecosystems (Finney 2000, Weatherspoon and Skinner 1996).

This decision defines the wildland fire problem in the Sierra Nevada as one that is caused by multiple lightning ignitions across a broad landscape. At times these events can occur over hundreds of thousands of acres, when suppression resources are over-extended and fire managers are forced to let some fires grow while others are suppressed until adequate resources arrive from outside the area. The temporal element of the fuels strategy is based on establishing priorities for planning fuel treatments, prescribing treatments, completing treatments, and maintaining treatment effectiveness over time. The time frame for accomplishing the fuels treatments in this decision is between 20 and 25 years.

Fire and fuels management relies on a combination of four primary strategies for modifying wildland fire behavior and re-introducing fire across broad landscapes:

- strategically placed area treatments,
- wildland fire use,
- defensible fuels profile zones adjacent to communities and areas of high value, and
- priority-setting mechanisms established in the national Cohesive Fire Strategy.

Strategically Placed Area Treatments (SPLATs)

Strategically placed area treatments are blocks of land, ranging anywhere from 50 to over 1,000 acres, where the vegetation has been treated to reduce fuel loading. The treatment areas are placed so that a spreading fire does not have a clear path of untreated fuels from the bottom of the slope to the ridge top. Managers consider historic fire regimes and the potential for severe wildfires (based on fuel loading, prevailing wind direction, and terrain features) in deciding where to place area treatments. The spatial pattern of the treated areas reduces rates of fire spread and reduces fire intensity at the head of the fire. The SPLAT strategy treats a relatively large proportion of the landscape, and this strategy facilitates fire reintroduction.

Strategically placed area treatments are designed to burn at lower intensities and slower rates of spread during wildfires than comparable untreated areas. Hence, wildfires are expected to have lighter impacts and be less damaging in treated areas.

The SPLAT strategy places treatments on the landscape that are linked together: treatments to protect structures in the defense (or inner) zone of the urban wildland intermix zone are effective when supported by treatments in the threat (or outer) zone of the urban wildland intermix zone, which in-turn are supported by the treatments done on the larger landscape.

Wildland Fire Use

Lightning-caused fires can be used to reduce fuel loads or to provide other resource benefits, such as conserving populations of fire-dependent species. Before wildland fires can be used, national forest managers must prepare a fire management plan that describes how prescribed fires and naturally caused wildland fires will achieve resource management objectives.

Defensible Fuel Profile Zones (DFPZs)

DFPZs are strategically located strips of land where the vegetation has been modified to a less dense fuel type. DFPZs are generally located along ridgetops and roads; these are areas where fire fighters would make a stand to contain a fire. The width is based on potential fire behavior based on available fuels, weather and wind, and topography. DFPZs are not designed to stop an oncoming wildfire by themselves, but rather to provide a safe location to facilitate fire suppression efforts and provide an anchor point for prescribed burning projects.

The DFPZ strategy initially treats a lower proportion of the landscape; treatments are located to protect specific values. DFPZs are typically placed in urban wildland intermix areas. After a network of DFPZs has been established, area fuel treatments (SPLATs) can be placed to enhance DFPZ effectiveness and increase the likelihood that the overall landscape strategy will reduce wildfire intensity and size.

Cohesive Fire Strategy

The national Cohesive Fire Strategy is an approach for reducing fuel loadings in fire-prone forests in order to protect people and sustain resources. The strategy directs fuel treatments at high-risk areas, specifically urban wildland intermix areas, readily accessible municipal (community) watersheds, and threatened and endangered species habitat. Hazardous fuels, fire regimes, and condition class are identified and mapped to develop treatment priorities. Priority-setting mechanisms, as well as criteria for identifying appropriate types of fuel treatments, are based on an iterative process, anchored in adaptive management and incremental steps that address the uncertainty associated with treating sensitive habitat areas.

Interestingly, over time, the four apparently different and unique tactics for modifying fire behavior, limiting the extent of wildfires on the landscape, and reintroducing fire to fire-dependent ecosystems come together so that it is difficult to separate them. Local fire managers will evaluate each landscape and determine how each component works together best. For example, one approach may involve developing a DFPZ strategy on the landscape first, and then following up with supporting fuels treatments in adjacent areas, based on the landscape's fire history and fire behavior characteristics. Another approach may use DFPZs in urban wildland intermix zones; treatments in DFPZs typically extend out from the urban wildland intermix areas to enhance suppression by modifying fire behavior and increasing fire control opportunities. Other additional treatments (such as SPLATs), arranged on the landscape to modify fire behavior over broader areas, can then be used to support these DFPZs.

As part of the landscape-level fuels management strategy, managers will consider areas that already contribute to fire behavior modification, such as different vegetation patterns, past management activities, burned areas, bodies of water, and barren areas, in locating strategically placed treatments. Managers will then identify the gaps in the landscape pattern where fire could spread at some undesired rate or direction. Treatments (including maintenance treatments and new fuel treatments) will be used to fill these gaps. In areas with limited access, prescribed fire and wildland fire use will be emphasized. Prescribed fires can be strategically located on the landscape to support a future wildland fire use program.

Smoke Management and Air Quality Protection

Direction is to emphasize smoke management and air quality whenever prescribed fire is used. The following documents provide guidance and direction for smoke management and air quality protection: (1) Interim Air Quality Policy on Wildland and Prescribed Fires, announced by the Environmental Protection Agency (EPA) in 1998; (2) Memorandum of Understanding between the California Air Resources Board (CARB) and the Forest Service, signed on July 13, 1999; (3) Smoke Management Guidelines for Agricultural and Prescribed Burning under Title 17, currently being revised by CARB; and (4) the Nevada Smoke Management Plan.

D. Conservation Strategy for Lower Westside Hardwood Ecosystems

Key elements of the lower westside hardwood conservation strategy include: desired condition, definitions of hardwood ecosystems, management of special habitats, and standards and guidelines pertaining to treatments in hardwood ecosystems.

Definitions of Hardwood Ecosystems

For purposes of this decision, vegetation communities dominated by California black oak, canyon live oak (tree form), Pacific madrone, or tanoak, are collectively referred to as montane hardwood forests. Ecosystems dominated by blue oak, valley oak, interior live oak (tree form), or Oregon white oak are referred to as blue oak woodlands. Collectively these are referred to as hardwood ecosystems. This standards and guidelines include direction for maintaining or enhancing the distribution of hardwood ecosystems. (See Section B. *Forest-wide Standards and Guidelines* in Part II of this Appendix.)

Desired Condition

Desired conditions in lower westside hardwood forest ecosystems include the following:

- A diversity of structural and seral conditions is present in landscapes in proportions that are ecologically sustainable at the watershed scale.
- Regeneration and recruitment of young hardwood trees is sufficient over time to replace mortality of older trees.
- Hardwood ecosystems are present in sufficient quality and quantity to provide important habitat elements for wildlife and native plant species.

Identifying Opportunities for Hardwood Ecosystem Restoration and Enhancement

During landscape analysis (See Part F. *Ecosystem Analysis* below.), managers will compare existing vegetation conditions with desired conditions to determine needs for restoring and enhancing hardwood ecosystems. Potential natural vegetation communities, which would occur if stand succession were allowed to proceed under a natural fire regime in the prevailing climate, provide the basis for desired conditions in hardwood ecosystems. Using potential natural vegetation as the desired condition highlights areas where hardwood ecosystems have been lost due to past management and changes in fire regime. Managers will then identify hardwood ecosystem enhancement or restoration projects in these areas. Desired conditions, including distributions of seral stages and stand densities, are derived from the local environmental conditions, and incorporated into the larger landscape.

Management of Special Habitats within the Blue Oak Woodland Ecosystem

Two wildlife habitats within the blue oak woodland ecosystem (valley oak woodlands and blue oak woodlands) are considered special habitats because of their limited range and ongoing decline. Research suggests that sustaining these habitats is a complicated and highly variable process best assessed at the local level. National forests will manage them by developing site-specific restoration strategies, either in a landscape analysis or as an independent project. A restoration strategy will be prepared for each stand before vegetation treatments, other than grazing, were implemented.

Vegetation Treatments in Hardwood Ecosystems

Standards and guidelines (detailed in Section B. *Forest-wide Standards and Guidelines* in Part II of this Appendix) provide direction for conducting vegetation treatments in hardwood ecosystems. Standards and guidelines contain provisions for: (1) retaining large live hardwood trees and snags, (2) maintaining

hardwood species diversity, and (3) recruiting young hardwood trees. Vegetation treatments in hardwood ecosystems will be consistent with hardwood stand maintenance and restoration goals.

E. Noxious Weeds Management Strategy

Forest-wide standards and guidelines for noxious weed management provide specific measures to be taken by the national forests to implement Forest Service Manual direction regarding noxious weeds. Appendix L of the FEIS contains specific Best Management Practices that can be used as appropriate to carry out the weed standards and guidelines. These Best Management Practices will also be appended to the Pacific Southwest Region Noxious Weed Management Strategy (signed by Regional Forester in 2000).

A project-level noxious weed risk assessment (USDA Forest Service 1995a) will serve as the primary mechanism for prescribing weed prevention measures. These risk assessments will be a standard component of the project planning process for ground-disturbing or site-altering activities. The risk assessment may be as simple as a one-page form documenting little or no risk posed by a project, or a more complex plan with contract provisions when risk is determined to be moderate to high. The risk assessment will demonstrate the need for and appropriateness of requiring contractors and permittees to take preventive measures, such as cleaning heavy equipment or obtaining certified weed-free mulch for erosion control.

The following management direction applies to this decision:

- Manage weeds using an integrated weed management approach in order of priority set forth in FSM 2081.2:

Priority 1. Prevent the introduction of new invaders

Priority 2. Conduct early treatment of new infestations

Priority 3. Contain and control established infestations

Provisions for implementing this management direction are embodied in the noxious weeds management standards and guidelines in Part II of this Appendix.

F. Ecosystem Analysis

Ecosystem analysis provides a context for managing whole ecosystems, that is all resources and situations encountered within geographic areas at various scales. These analyses are conducted to better understand how watersheds and landscapes function before projects are planned. Watersheds are particularly useful for study because every watershed is a well-defined area with unique features, recurring processes, and a distinctive collection of plants and animals. An ecosystem analysis approach provides a holistic context for subsequent discussions and decisions for planning and implementing projects.

Ecosystem analysis will be conducted at the following four spatial scales:

- river basin
- watershed,
- landscape, and
- project.

The scales are arranged in a hierarchical order: each scale is nested within the next higher scale above it. The river basin scale is the largest scale of analysis. Several watersheds are nested within each river basin. Landscapes fall within watersheds, and finally projects fall within landscapes.

Data Relationships in Ecosystem Analysis

At the river basin and watershed scale, ecosystem analysis considers broad, general processes and ecosystem elements that provide context for smaller scale analyses. The analysis at these two scales relies on existing information from regional and national forest databases. These analyses do not require on-the-ground data collection or analysis.

At the landscape scale, generally 30,000 to 50,000 acres, existing condition information is gathered from local databases or aerial photo analysis. Landscape analysis does not require collecting plot data in the field. The information assembled during landscape analysis provides the basis for identifying opportunities at the project scale to move the landscape toward desired conditions.

Data used river basin and watershed scale analyses will be brought forward to the landscape level. This data will help provide the context for the landscape and determine the need for connectivity between adjacent landscapes. For example, a specific landscape may not contain a sensitive species that is found in an adjacent landscape within the watershed. However, the unoccupied landscape may provide suitable habitat for that species. Without consideration of the larger watershed scale, the landscape analysis might not recognize the need to document the presence of the suitable habitat. Landscape analysis could proceed without a previously completed river basin or watershed analysis; however, the landscape analysis would consider and apply appropriate information from these larger scales.

Information gathered through other analyses, such as grazing allotment management plans, wilderness management plans, or roads analysis, may be conducted at different scales and times than landscape analyses. Since there are separate schedules for completing grazing allotment management plans, wilderness management plans, and roads analysis, information gained from these planning and analysis efforts will be incorporated into landscape analysis.

Information gathered through all scales of ecosystem analysis will be used to identify potential conflicts between existing uses and resource objectives across the landscape and document the need for corrective

actions or mitigation measures. A schedule of restoration actions will be developed so that existing uses are consistent with resource objectives at the landscape scale.

River Basin Analysis

There are 45 major river basins in the Sierra Nevada Forest Plan Amendment Project planning area as described in Appendix I of the FEIS. River basins range in size from approximately 46,000 acres to almost 1,800,000 acres, with an average size of about 550,000 acres.

Analyses conducted at the river basin scale will summarize spatial information to provide the context for smaller scale analyses. River basin analyses use existing information in regional and national forest databases to identify the following:

- the location of each watershed in the river basin;
- the provisional watershed condition assessment rating (Appendix I of the FEIS);
- locations of water quality limited (303(d)) stream segments;
 - Category I-IV Watersheds identified through the Unified Watershed Assessment;
- land allocations in existing forest plans, such as wilderness areas, roadless areas, research natural areas;
- land allocations included in this decision, such as old forest emphasis areas, critical aquatic refuges, urban wildland intermix zones, protected activity centers, and willow flycatcher habitat;
- emphasis species and the location of known or potential habitat for these species from wildlife habitat relationships (WHR) data or conservation assessments;
 - locations of active grazing allotments;
 - locations of historic wildfires and date of occurrence;
 - locations of developed recreation sites and facilities;
 - maintenance level 3, 4, and 5 road locations and condition information from roads analysis; and
 - land ownership patterns.

The information assembled during river basin analysis is primarily used to identify priority watersheds for further analysis. The river basin analysis provides a means for determining potential links and relationships that must be maintained or established between watersheds. This scale of analysis also identifies needs for collaboration across ownership or national forest boundaries. Because river basins are often located in more than one national forest, managers across national forests will need to coordinate data analysis.

Watershed Analysis

Watersheds are nested within river basins. They are mapped as 5th or 6th code hydrologic units, ranging in size from about 100,000 to 150,000 acres. There are 150 watersheds of this scale in the Sierra Nevada Forest Plan Amendment Project planning area. (See Appendix I of the FEIS.)

Unlike river basins, watersheds are more likely to be contained within a single national forest; however, many do cross national forest boundaries. Like river basin analysis, the product at this scale is also a map and database, but the watershed analysis shows more localized information and potential areas of conflict.

Like river basin analyses, watershed scale analyses summarize spatial information to provide the context for smaller scale analyses. Watershed analyses further clarify information developed at the river basin scale. Analyses at this scale may be used to refine watershed condition characteristics, identify specific linkages between watersheds, refine locations of species and habitat, and refine locations of urban wildland intermix zones and administrative areas. Watershed analysis includes:

- refinement of watershed condition assessment characteristics, if needed;
- locations of linkages between watersheds to provide habitat connectivity;
- locations of known threatened, endangered, and sensitive plant and animal species and suitable or historic habitat;
- den sites for fisher and marten;
- location of wildland urban intermix threat and defense zones;
- locations of special aquatic features, such as bogs, fens, springs, and meadows;
- locations of mining claims or areas open to mineral extraction;
- locations of known dispersed camping areas; and
- locations of developed OHV trails or areas.

Landscape Analysis

Landscape analysis is a key component of the conservation and management strategies in this decision. Landscape analysis characterizes historic conditions, current status, and future trends of an area. These analyses should identify opportunities and priorities for correcting problems.

Landscapes are nested within watersheds. The scale at which these analyses are conducted ranges between 13,000 and 130,000 acres, with most landscape analyses conducted at the 30,000- to 50,000-acre scale. Analysis at the landscape scale determines key existing forest characteristics related to wildlife habitat and fire and fuels management, aquatic and riparian restoration priorities, and road management priorities.

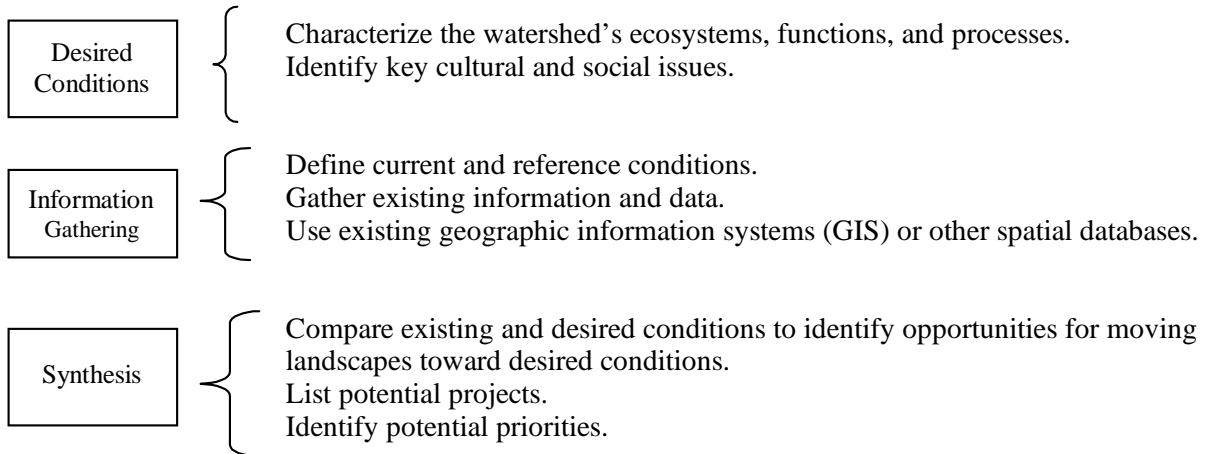
The results of landscape analysis are used to:

- establish a consistent, landscape-wide context for maintaining or restoring ecological conditions that provide the desired levels of resources, such as clean water, clean air, plant and animal community diversity, and species viability, consistent with regulatory requirements and ongoing policies;
- identify opportunities in a watershed landscape context for site-specific environmental analysis;
- identify opportunities for reducing risks and hazards, such as those associated with catastrophic wildland fires in the Sierra Nevada; and
- facilitate program and budget development by identifying priorities for cultural, social, economic, and ecological needs in watersheds.

During landscape analysis, existing uses or activities are reviewed to identify compatibility of the use with local species, particularly threatened, endangered, and sensitive species, and to determine if any corrective actions are needed to bring the activity or use into consistency with riparian conservation objectives. (See Riparian Conservation Objectives under Section B. *Aquatic Management Strategy* of this part).

Elements of a Landscape Analysis

Several guides are available for conducting landscape analysis. The intent is to streamline landscape analysis, and to sensibly use it for collaboratively arriving at land management strategies that are tailored to local conditions, capabilities, and restoration needs. Landscape analysis generally includes the following elements:



By themselves, landscape analyses do not result in decisions; the analyses identify opportunities for needed projects, monitoring, ecosystem restoration, and research. Project level planning (described below) results in Forest Service decisions that are subject to National Environmental Policy Act (NEPA) requirements of notice and review and administrative appeal.

Partnerships and collaborative interaction involving local communities, agencies, American Indian tribes, and the public at large are essential for arriving at realistic solutions for sustaining desired ecosystem conditions while balancing cultural and social values and needs. The direction in this Record of Decision for the Sierra Nevada Forest Plan Amendment Project provides desired conditions for Sierra Nevada national forest ecosystems. Desired ecosystem conditions are provided by the direction in Involving all interests in a particular landscape analysis increases the likelihood that the Forest Service will identify realistic, well-informed opportunities for moving landscape toward desired conditions.

Types of Data Used in Landscape Analysis

Landscape analysis is a dynamic process; the analysis is continually updated as more is learned and more information is obtained about a particular landscape. The following list represents key components of a typical landscape analysis; however, the specific data collected during landscape analysis will be based on local issues associated with a particular landscape. In some instances, these issues could be addressed by analyzing a partial list of the components described below.

Vegetation Analysis: The following data is collected from existing records and verified through aerial photo interpretation. It does not require field verification of the characteristic. Field verification occurs at the project level. Forested patches or stands classified during this process must be at least five acres in size.

- Update and refine vegetation strata labels and polygons.
- Map canopy cover by the following classes: 0 to 40 percent; 40 to 70 percent; and greater than 70 percent.
- Where possible, cross walk timber strata to CWHR types.
- Map existing and potential natural (FSH 2090) hardwood distributions.
- Transfer information on the location of high hazard and risk areas for insect and disease from the regional database.

Physical landscape: This information is collected from existing records, maps, and aerial photo interpretation.

- Map areas with high geologic risk or instability,
- Identify areas with high soil erosion potential,
- Identify preliminary stream types following standard protocol such as Rosgen stream typing

Species Data: Based on the data collected from the vegetation analysis, identify potential home range core areas for California spotted owls and willow flycatcher habitat within the landscape. Final home range core areas will be delineated at the project level.

Identify specific areas within the landscape that provide suitable habitat based on aerial photo interpretation, soil maps, or local knowledge for other threatened, endangered, and sensitive plant and animal species.

Fire and Fuels Management: Document the following characteristics across the landscape:

- historic fire regimes,
- fire and fuel hazards, risk of ignition,
- location of wildland urban intermix defense and threat zone,
- values at risk and the consequences of wildland fire under current and expected future conditions.

Include a description of how wildland fire could influence the landscape and surrounding watershed as well as potential fire effects, fuel loading, expected fire behavior, fire occurrence, and smoke emissions calculations.

Determine the potential layout for strategically placed area treatments (SPLATS) on the landscape. Treatment blocks should be placed so that a spreading fire does not have a clear path of untreated fuels from the bottom of the slope to the ridgetop. Consider historic fire regimes and the potential for severe wildfires in deciding where to place area treatments.

Roads Management: Inventory maintenance level 1 and 2 roads (including unclassified roads) to augment the arterial and collector road inventory. Identify potential conflicts with water quality objectives or conflicts with threatened, endangered, and sensitive species. Identify a full range of road system management options, including road improvements, decommissioning, seasonal or multi-year road closures, and new road construction, based on social and environmental effects as well as administrative needs, such as fire access.

Existing Uses: Inventory “existing uses” (power lines, campgrounds, designated OHV trails and areas) within the landscape. Identify conflicts with threatened, endangered, and sensitive species or water quality objectives.

Project Analysis

Potential projects arise from opportunities identified during landscape analysis. (Opportunities describe what needs to be done to achieve or maintain desired conditions.) Projects selected for implementation must be analyzed and their potential environmental impacts disclosed, as required by NEPA. The NEPA process includes public involvement. Ecosystem analyses should lead to stronger and broader public involvement efforts that include conservation partnerships, traditional cultural groups, and collaboration.

Project level planning requires analysis of cumulative effects. The hierarchical framework of ecosystem analysis will facilitate cumulative effects analysis by providing information at multiple scales. Where landscape analyses have been done, project planning can proceed more efficiently. In cases where landscape analyses have not been completed for an area, project analysis will not trigger the initiation of a landscape analysis.

Time frame and Priority for Conducting Ecosystem Analyses

River basin and watershed analyses should be completed within 2 years after completion of the ROD, focusing first on areas either occupied by threatened, endangered, and sensitive species or containing historic habitat for these species as shown in Tables T.1 and T.2. in Appendix T of the FEIS.

Landscape analyses will be completed first in landscapes containing known, occupied, or historic habitat for threatened, endangered, and sensitive aquatic species. (These landscapes are identified as critical aquatic refuges.) The intent is to complete landscape analyses for all national forest lands in the Sierra Nevada Forest Plan Amendment Project area within 5 years after the ROD is signed.

II. Standards and Guidelines

A. Hierarchy of Standards and Guidelines

The decision for the Sierra Nevada Forest Plan Amendment Project includes a network of land allocations. Each land allocation has a set of standards and guidelines that determine how management is to proceed within the allocation. The allocations and standards and guidelines form a comprehensive strategy for addressing the purpose and need for the Sierra Nevada Forest Plan Amendment Project.

Broad-scale land allocations, such as old forest emphasis areas, are delineated on the Modified Alternative 8 map in the FEIS while smaller-scale land allocations, such as California spotted owl protected activity centers (PACs), are not shown on the map. (These small-scale land allocations will be delineated by each national forest.) Land allocations shown on the FEIS Modified Alternative 8 map are referred to as mapped allocations; land allocations that do not appear on the map are referred to as unmapped allocations.

Certain land allocations overlap with one another to varying degrees; however, this decision establishes a priority ordering of land allocations. Management direction for higher priority allocations pre-empts management direction for lower priority allocations. Generally, land allocations that have more restrictive management direction pre-empt those with less restrictive direction. This decision conveys the concept of priority ordering of land allocations in two ways, depending on whether a land allocation is mapped or unmapped.

For mapped allocations (including existing and proposed wilderness areas, wild and scenic river areas, southern Sierra fisher conservation area, old forest emphasis areas, urban wildland intermix zone, and general forest), land allocations with more restrictive standards and guidelines mask other mapped allocations that are lower in the priority ordering. For example, wilderness and wild and scenic river areas pre-empt all other land allocations because of priorities conveyed by their legal status: the full extent of these areas is shown on the map. Old forest emphasis areas pre-empt general forest areas, and this priority ordering is clearly displayed on the map. Mapped allocations do not overlap with one another, with two notable exceptions: inventoried roadless areas and urban wildland intermix zones. Inventoried roadless areas are managed consistent with recent national direction regardless of the land allocation in which they fall. The map shows urban wildland intermix zones overlapping with other mapped land allocations. However, the fuel treatment standards and guidelines for the urban wildland intermix zone (outside of wilderness areas and wild and scenic river areas) take precedence over fuel treatment standards and guidelines for underlying land allocations (with specific exceptions for protected activity centers, den sites, and riparian areas described below).

The unmapped allocations overlap with the mapped allocations. The standards and guidelines for the unmapped allocations convey their priority ordering relative to other land allocations. Land allocations with standards and guidelines that protect special habitats or species are placed higher in the priority ordering, while land allocations that call for more active management are placed lower in the ordering. For example, California spotted owl protected activity centers (PACs) have standards and guidelines that protect owl habitat and breeding by limiting the types and intensities of fuels treatments that can be conducted within their boundaries. Therefore, where PACs overlap with old forest emphasis areas, standards and guidelines for California spotted owl PACs take precedence over standards and guidelines for old forest emphasis areas (where some mechanical fuels treatments are permitted).

Riparian conservation areas and critical aquatic refuges overlap all land allocations. The standards and guidelines for riparian conservation areas apply in these areas except in cases where the standards and guidelines of the underlying land allocation place greater restrictions on management activities. For example, riparian conservation area standards and guidelines allow mechanical treatments (based on consistency with riparian conservation objectives). However, where a riparian conservation area overlaps with a California spotted owl PAC (outside the defense zone of the urban wildland intermix zone), treatments are limited to prescribed burning only, consistent with the more restrictive standards and guidelines for fuel treatments in PACs.

Table II.A.1 illustrates the relationship between standards and guidelines for overlapping land allocations. The following narrative sections of this part describe where each land allocation fits into the overall land allocation hierarchy of this decision.

Table II.A.1. Relationships between standards and guidelines for overlapping land allocations. Cells in the table summarize management direction for overlapping areas.

	Existing and Proposed Wilderness, Wild and Scenic Rivers	Southern Sierra Fisher Conservation Area	Old Forest Emphasis Area	Urban Wildland Intermix: Defense Zone	Urban Wildland Intermix: Threat Zone	General Forest
California Spotted Owl PACs	Apply direction consistent with wilderness and wild and scenic river area direction	Apply direction for PACs	Apply direction for PACs	Apply special management direction for PACs in these areas	Apply direction for PACs	Apply direction for PACs
Northern Goshawk PACs	Apply direction consistent with wilderness and wild and scenic river area direction	Apply direction for PACs	Apply direction for PACs	Apply special management direction for PACs in these areas	Apply direction for PACs	Apply direction for PACs
Great Gray Owl Protected Activity Centers	Apply direction consistent with wilderness and wild and scenic river area direction	Apply direction for PACs	Apply direction for PACs	Apply direction for PACs	Apply direction for PACs	Apply direction for PACs
Forest Carnivore Den Site Buffers	Apply direction consistent with wilderness and wild and scenic river area direction	Apply direction for den sites	Apply direction for den sites	Apply special management direction for den sites in these areas.	Apply special management direction for den sites in these areas.	Apply direction for den sites
California Spotted Owl Home Range Core Areas	Apply direction for wilderness and wild and scenic river areas	Apply direction for home range core areas.	Identical standards and guidelines	Core area standards and guidelines do not apply.	Core area standards and guidelines do not apply.	Apply direction for core areas
Riparian Conservation Areas and Critical Aquatic Refuges	Apply direction consistent with wilderness and wild and scenic river area direction	Apply direction for both allocations.	Apply direction for both allocations.	Apply direction for both allocations.	Apply direction for both allocations.	Apply direction for both allocations.

B. Forest-wide Standards and Guidelines

The standards and guidelines described in this section apply to all land allocations (other than wilderness areas and wild and scenic river areas), unless stated otherwise in these standards and guidelines. Standards and guidelines in existing forest plans that are not amended by this Record of Decision still apply.

Fuel Reduction Treatments

Strategically place fuel treatments across the landscape to achieve fuel conditions that reduce the size and severity of wildland fires. Maintain 30 to 40 percent of each landscape (outside the defense zone of the urban wildland intermix zone) in a condition that meets fuel management objectives.

Locate fuel treatments to interrupt wildland fire spread and reduce fire severity. Typically locate treatment areas on the upper two-thirds of the slope, on south and west aspects, in mid- and lower elevation vegetation types. Conduct fuel treatments in areas of high fire hazard and risk in the following priority order: (1) urban wildland intermix zone, (2) old forest emphasis areas where fire hazard and risk is greatest, (3) sensitive species habitats, and (4) general forest.

Incorporate fuel treatment and protection planning into reforestation plans. Ensure that tree stocking levels and silvicultural goals are consistent with fuel reduction objectives in plantations located in high and moderate fire hazard and risk areas.

The structural change to treatment acres by mechanical methods is limited to one per decade. Treatments should be designed to be effective for at least 10 years. When subsequent entries within 10 years are needed to reduce surface fuels, prescribed fire is the preferred method. When burning opportunities are limited, mechanical treatments such as mastication and piling, are allowed.

Vegetation and Fuels Treatments in Plantations

In plantations (timber strata classifications 0x, 1x, 2x, and 3x), apply the necessary silvicultural and fuels reduction treatments to: (1) accelerate the development of old forest characteristics, (2) increase stand heterogeneity, (3) promote hardwoods, and (4) reduce risk of loss to wildland fire. Use mechanical fuels treatments to remove the material necessary to achieve the following outcomes if the treated plantation was to burn under 90th percentile fire weather conditions: (1) wildland fire would burn with average flame lengths of 6 feet or less, (2) the rate of fire spread would be less than 50 percent of the pre-treatment rate of spread, and (3) fire line production rates would be doubled. Achieve these outcomes by reducing surface and ladder fuels and adjacent crown fuels. Treatments should be effective for more than 5 years.

Vegetation and Fuels Treatments in Shrubfields

Design mechanical treatments in brush and shrub patches to remove the material necessary to achieve the following outcomes from wildland fire under 90th percentile fire weather conditions: (1) wildland fires would burn with an average flame length of 8 feet or less; (2) the fire's rate of spread would be less than 50 percent of the pre-treatment rate of spread; and (3) fire line production rates would be doubled. Treatments should be effective for more than 5 years.

Fuel Treatments in Forested Stands of Large Trees with Moderate to Dense Canopy Cover

Identify stands larger than 1 acre classified as California Wildlife Habitat Relationships (CWHR) 5M, 5D, and 6.

The following standards and guidelines apply to forested patches or stands larger than 1 acre identified as CWHR 5M, 5D, and 6 that are located outside the defense zone of the urban wildland intermix zone:

Design mechanical fuel treatments to remove the material necessary to achieve the following outcomes:

- *Stands with less than 40 percent canopy cover:* Over 75 percent of the stand area, achieve an average live crown base height of 15 feet and an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions.
- *Stands with 40 to 70 percent canopy cover:* Over 75 percent of the stand area, achieve an average live crown base height of 20 feet and an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions.
- *Stands with greater than 70 percent canopy cover:* Over 75 percent of the stand area, achieve an average live crown base height of 25 feet and an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions.

To enhance stand heterogeneity and to maintain intact biological processes, particularly soil biota that may be affected by mechanical treatments, do not mechanically treat the remaining 25 percent of the stand area.

Design mechanical treatments to achieve or approach the fuels outcomes described above by removing surface and ladder fuels less than 12 inches dbh. Allow incidental felling of trees between 12 and 20 inches dbh where required for operability. Retain felled trees on the ground where needed to achieve down woody material standards of 10 to 20 tons per acre in logs greater than 12 inches diameter at midpoint.

Do not reduce canopy cover in dominant and co-dominant trees by more than 10 percent across a stand following mechanical treatments. (For example, if canopy cover in a stand's dominant and co-dominant trees is 80 percent, retain at least 70 percent canopy cover in dominant and co-dominant trees following mechanical treatment.)

In westside forest types, where pre-treatment canopy cover is between 50 and 59 percent, design mechanical treatments to retain a minimum of 50 percent canopy cover in dominant and co-dominant trees. Do not reduce canopy cover in stands that currently have between 40 and 50 percent canopy cover, except where canopy cover reductions result from removing shade-tolerant trees less than 6 inches dbh. In the eastside pine forest type, retain a minimum of 30 percent canopy cover.

For prescribed fire treatments, use multiple entries as needed to achieve fuels management objectives, up to two burns per decade and four burns over 20 years.

Hardwood Management

Where possible, create openings around existing California black oak and canyon live oak to stimulate natural regeneration.

Manage hardwood ecosystems for a diversity of hardwood tree size classes within a stand such that seedlings, saplings, and pole-sized trees are sufficiently abundant to replace large trees that die.

Retain the mix of mast-producing species where they exist within a stand.

Retain all blue oak and valley oak trees except: (1) stand restoration strategies call for tree removal; (2) trees are lost to fire; or (3) where tree removal is needed for public health and safety.

When planning prescribed fire or mechanical treatments in hardwood ecosystems: (1) consider the risk of noxious weed spread and (2) minimize impacts to hardwood ecosystem structure and biodiversity.

During mechanical vegetation treatments, prescribed fire, and salvage operations, retain all large hardwoods on the westside except where: (1) large trees pose an immediate threat to human life or property or (2) losses of large trees are incurred due to prescribed or wildland fire. Large montane hardwoods are trees with a dbh of 12 inches or greater. Large blue oak woodland hardwoods are trees with a dbh of 8 inches or greater. Allow removal of larger hardwood trees (up to 20 inches dbh) if research supports the need to remove larger trees to maintain and enhance the hardwood stand.

Prior to commercial and noncommercial hardwood and fuelwood removal in hardwood ecosystems, pre-mark or pre-cut hardwood trees to ensure that stand goals are met. Retain a diverse distribution of stand cover classes.

During or prior to landscape analysis, spatially determine distributions of existing and potential natural hardwood ecosystems (Forest Service Handbook (FSH) 2090.11). Assume pre-1850 disturbance levels for potential natural community distribution. Work with province ecologists or other qualified personnel to map and/or model hardwood ecosystems at a landscape scale (approximately 30,000 to 50,000 acres). Include the following steps in the analysis: (1) compare distributions of potential natural hardwood ecosystems with existing hardwood ecosystems; (2) identify locations where existing hardwood ecosystems are outside the natural range of variability for potential natural hardwood ecosystem distribution; and (3) identify hardwood restoration and enhancement projects.

Include hardwoods in stand examinations. Encourage hardwoods in plantations. Promote hardwoods after stand-replacing events. Retain buffers around existing hardwood trees by not planting conifers within 20 feet of the edge of hardwood tree crowns.

Vegetation Management Related to Habitat Connectivity for Old Forest Associated Species

Minimize old forest habitat fragmentation. Assess potential impacts of fragmentation on old forest associated species (particularly fisher and marten) in biological evaluations. Evaluate locations of new landings, staging areas, and recreational developments, including trails and other disturbances.

Assess the potential impact of projects on the connectivity of habitat for old forest associated species.

Consider forested linkages (with canopy cover greater than 40 percent) that are interconnected via riparian areas and ridgetop saddles during landscape-level and project-level analysis.

During landscape analysis, identify areas for acquisition, exchange, or conservation easements to enhance connectivity of habitat for old forest associated species. Assign a priority order for these areas.

If fishers are detected outside the southern Sierra fisher conservation area, evaluate habitat conditions and implement appropriate mitigation measures to retain suitable habitat within the estimated home range. Institute project-level surveys over the appropriate landscape area.

Large Tree Retention

When implementing vegetation and fuels treatments, retain all live conifer trees with a dbh of 30 inches or greater in westside forest types and 24 inches or greater in the eastside pine forest type. Retain montane hardwoods with a dbh of 12 inches or larger in westside forest types. Occasional mortality of larger trees is expected to occur; however, design prescribed burn prescriptions and techniques to minimize the loss of large trees and large down material.

Tree Species Composition

Promote shade intolerant pine species (sugar pine and ponderosa pine) and hardwoods in westside forest types.

Snags and Down Woody Material

Within westside vegetation types, beginning with the largest down logs, sequentially retain pieces of down wood until at least 10 to 20 tons per acre are retained over a treatment unit. Within eastside vegetation types, retain at least three large logs per acre. Do not retain pieces smaller than 12 inches diameter at midpoint to meet this standard. Treatment units in the defense zone of the urban wildland intermix zone are exempt from this standard.

As special use permits for areas larger than 40 acres are issued or re-issued, consider site-specific measures to maintain coarse woody material. Permits for areas less than 40 acres are exempt from this standard and guideline.

Following stand-replacing events (as a result of wildland fire, insects, or diseases), do not conduct salvage harvest in at least 10 percent of the total area affected by the stand-replacing event. This unsalvaged acreage should be comprised of stands classified as California Wildlife Habitat Relationship (CWHR) size class 5 or 6 (average dbh of overstory trees (snags) greater than 24 inches). As needed, use stands classified as CWHR size class 4 (average dbh of overstory trees (snags) between 11 and 24 inches) to reach the 10-percent level. This standard and guideline does not apply to the defense zone of the urban wildland intermix zone.

Retain the following numbers of large snags after fuels treatments except where: (1) snag removal is needed to address imminent safety hazards and (2) snag levels are reduced as a result of incidental loss to prescribed fire. In westside mixed conifer and ponderosa pine forest types, retain four of the largest snags per acre. In the red fir forest type, retain six of the largest snags per acre. In eastside pine and eastside mixed conifer forest types, retain three of the largest snags per acre. In westside hardwood ecosystems, retain four of the largest snags (hardwood or conifer) per acre. Where standing live hardwood trees lack dead branches, retain six of the largest snags per acre, where they exist, to supplement wildlife needs for dead material. Use snags larger than 15 inches dbh to meet this standard. Evaluate snag density on a 10-acre basis. The defense zone of the urban wildland intermix zone and developed recreation sites are exempt from this standard and guideline.

Incidental Removal of Vegetation and Down Woody Material

Incidental removal of vegetation and down woody material for activities such as administering special use permits; maintaining recreation developments; constructing, reconstructing, and maintaining roads, trails, and rights of way; expanding resorts based on approved development plans; and removing trees that present imminent safety hazards may deviate from vegetation management standards and guidelines. Exceptions to vegetation management standards and guidelines may also include restoration activities, such as regenerating aspen, managing sugar pine, and regenerating giant sequoia.

Fall and remove hazard trees along maintenance level 3, 4, and 5 roads and within or immediately adjacent (tree falling distance) to administrative sites. Review by an appropriate resource specialist is required prior to falling hazard trees along maintenance level 1 and 2 roads. Retain felled trees where needed to meet down woody material standards.

Wolverine and Sierra Nevada Red Fox Detections

Upon a detection (photograph, track plate, or sighting verified by a wildlife biologist) of a wolverine or Sierra Nevada red fox, conduct an analysis to determine if activities within 5 miles of the detection have a potential to affect the species. For a 2-year period following the detection, restrict activities that are determined in the analysis to have an adverse impact from January 1 to June 30.

Surveys in Suitable California Spotted Owl Habitat

Prior to undertaking vegetation treatments in suitable California spotted owl habitat with unknown occupancy, conduct surveys in accordance with Pacific Southwest Region survey protocol. Designate California spotted owl protected activity centers (PACs) where appropriate based on survey results.

Surveys in Suitable Northern Goshawk Nesting Habitat

Prior to undertaking vegetation treatments in suitable northern goshawk nesting habitat that is not within an existing California spotted owl or northern goshawk PAC, conduct surveys using Pacific Southwest Region survey protocols. Suitable northern goshawk nesting habitat is defined as follows: (1) in the eastside pine forest type, suitable nesting habitat is stands with an average tree size of 11 inches dbh or greater and at least 20 percent canopy cover; and (2) in other forest types, suitable nesting habitat is stands with an average tree size of 11 inches dbh or greater and at least 40 percent canopy cover. Delineate PACs surrounding all known and newly discovered northern goshawk breeding territories detected on National Forest System lands. (Refer to the section on northern goshawk PACs for detailed standards and guidelines.)

Threatened, Endangered, Proposed, and Sensitive Plant Species

Conduct field surveys for threatened, endangered, proposed, and sensitive (TEPS) plant species early enough in the project planning process so that the project can be designed to conserve or enhance TEPS plants and their habitat. Conduct surveys according to procedures outlined in the Forest Service Handbook (FSH 2609.25.11). If additional field surveys are conducted as part of project implementation, document the survey results in the project file.

Minimize or eliminate direct and indirect impacts from management activities on TEPS plants unless the activity is designed to maintain or improve plant populations (Forest Service Manual 2670).

Ensure that all projects involving revegetation (planting or seeding) adhere to regional native plant policies.

Noxious Weed Management

Follow Forest Service Manual (FSM 2080) direction pertaining to integrated weed management when planning weed control projects.

Inform forest users, local agencies, special use permittees, groups, and organizations in communities near national forests about noxious weed prevention and management.

Work cooperatively with California and Nevada State agencies and individual counties (for example, Cooperative Weed Management Areas) to: (1) prevent the introduction and establishment of noxious weed infestations and (2) control existing infestations.

As part of project planning, conduct a noxious weed risk assessment to determine risks for weed spread (high, moderate, or low) associated with different types of proposed management activities. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy to develop mitigation measures for high and moderate risk activities.

When prescribed in project-level noxious weed risk assessments, require off-road equipment and vehicles (both Forest Service and contracted) used for project implementation to be weed free. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy.

Minimize weed spread by incorporating weed prevention and control measures into ongoing management or maintenance activities that involve ground disturbance or the possibility of spreading weeds. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy.

Conduct follow-up inspections of ground disturbing activities to ensure adherence to the Regional Noxious Weed Management Strategy.

Encourage use of certified weed free hay and straw. Cooperate with other agencies and the public in developing a certification program for weed free hay and straw. Phase in the program as certified weed free hay and straw becomes available. This standard and guideline applies to pack and saddle stock used by the public, livestock permittees, outfitter guide permittees, and local, State, and Federal agencies.

Include weed prevention measures, as necessary, when amending or re-issuing permits (including, but not limited to, livestock grazing, special uses, and pack stock operator permits).

Include weed prevention measures and weed control treatments in mining plans of operation and reclamation plans. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy. Monitor for weeds, as appropriate, for 2 years after project implementation (assuming no weed introductions have occurred).

Conduct a risk analysis for weed spread associated with burned area emergency rehabilitation (BAER) treatments. The BAER team is responsible for conducting this analysis. Monitor and treat weed infestations for 3 years after the fire.

During landscape analysis or project-level planning, consider restoring or revegetating degraded ecosystems to minimize the potential for noxious weed reinfestations. Adhere to regional native plant policies for revegetation.

Consult with American Indians to determine priority areas for weed prevention and control where traditional gathering areas are threatened by weed infestations.

Complete noxious weed inventories, based on a regional protocol, within 3 years of the signing of the record of decision for the Sierra Nevada Forest Plan Amendment Project. Review and update these inventories on an annual basis.

As outlined in the Regional Noxious Weed Management Strategy, when new, small weed infestations are detected, emphasize eradication of these infestations while providing for the safety of field personnel.

Routinely monitor noxious weed control projects to determine success and to evaluate the need for follow-up treatments or different control methods. Monitor known weed infestations, as appropriate, to determine changes in weed population density and rate of spread.

Grazing

To protect hardwood regeneration in grazing allotments, allow livestock browse on no more than 20 percent of annual growth of hardwood seedlings and advanced regeneration. Alter grazing plans if hardwood regeneration and recruitment needs are not being met.

Grazing utilization in annual grasslands will maintain a minimum of 60 percent cover. Where grasslands are in satisfactory condition and annual precipitation is greater than 10 inches, manage for 700 pounds residual dry matter (RDM) per acre. Where grasslands are in satisfactory condition and annual precipitation is less than 10 inches, manage for 400 pounds RDM per acre. Where grasslands are in unsatisfactory condition and annual precipitation is greater than 10 inches, manage for 1,000 pounds RDM per acre; manage for 700 pounds RDM per acre where grasslands are in unsatisfactory condition and precipitation is less than 10 inches. Adjust these standards, as needed, based on grassland condition. This standard and guideline only applies to grazing utilization.

Mining

Ensure that plans of operation, reclamation plans, and reclamation bonds address the costs of: (1) removing facilities, equipment, and materials; (2) isolating and neutralizing or removing toxic or potentially toxic materials; (3) salvaging and replacing topsoil; and (4) preparing the seed bed and revegetating to meet the objectives of the land allocation in which the operation is located.

Ensure that mine owners and operators limit new road construction, decommission unnecessary roads, and maintain needed roads consistent with Forest Service roads policy and management direction for the land allocation.

Require mine reclamation to be conducted in a timely manner.

Inspect and monitor mining-related activities on a regular basis to ensure compliance with laws, regulations, and operating plans. Base the frequency of inspections and monitoring on the potential severity of mining activity-related impacts.

During mining-related activities, limit the clearing of trees and other vegetation to the minimum necessary. Clearing of vegetation should be pertinent to the approved phase of mineral exploration and development.

Wheeled Vehicles

Allow wheeled vehicle travel on designated routes, trails, and off highway vehicle (OHV) areas. Each national forest may designate where OHV use is allowed. Unless otherwise restricted by existing forest plans or other area-specific standards and guidelines, allow cross-country travel by over snow vehicles.

Road Construction, Reconstruction, and Relocation

To protect watershed resources, meet the following standards for road construction, road reconstruction, and road relocation: (1) design new stream crossings and replacement stream crossings for at least the 100-year flood, including bedload and debris; (2) design stream crossings to minimize the diversion of streamflow out of the channel and down the road in the event of a crossing failure; (3) design stream crossings to minimize disruption of natural hydrologic flow paths, including minimizing diversion of streamflow and interception of surface and subsurface water; (4) avoid wetlands or minimize effects to natural flow patterns in wetlands; and (5) avoid road construction in meadows.

Conduct an integrated interdisciplinary transportation analysis, following the national roads analysis procedures, as part of landscape analysis. Complete unclassified road inventories for each national forest within 10 years.

Air Quality

Coordinate and cooperate with other agencies and the public to manage air quality. Conduct prescribed burns when conditions for smoke dispersal are favorable, especially away from sensitive or Class I Areas. Use smoke modeling tools to predict smoke dispersion.

Minimize smoke emissions by following Best Available Control Measures (BACMs). Avoid burning on high visitor days. Notify the public before burning.

Use the following documents for guidance and direction for smoke management and air quality protection: (1) Interim Air Quality Policy on Wildland and Prescribed Fires, announced by the Environmental Protection Agency (EPA) in 1998; (2) Memorandum of Understanding between the California Air Resources Board (CARB) and the Forest Service, signed on July 13, 1999; (3) Smoke Management Guidelines for Agricultural and Prescribed Burning under Title 17, currently being revised by CARB; and (4) the Nevada Smoke Management Plan.

Soil Quality

Implement the soil quality standards outlined in Appendix F of the FEIS. Attain standards for ground cover, compaction, and ground disturbance to minimize the risk of sediment delivery to aquatic systems from management activities.

C. Land Allocation Standards and Guidelines

The standards and guidelines in this part apply to specific land allocations.

1. Wilderness Areas and Wild and Scenic River Areas

Wilderness Areas and Wild and Scenic River Areas are shown on the Modified Alternative 8 map for the FEIS.

Management of these lands follows written direction in applicable legislation and plans. Direction from the standards and guidelines in this decision also applies where it is more restrictive or provides greater benefits to at-risk species, unless application of these standards and guidelines are contrary to legislative or regulatory language or intent.

2. Inventoried Roadless Areas

Inventoried roadless areas are shown on the Modified Alternative 8 map for the FEIS.

National management direction from the decision for the Roadless Rule Final EIS prohibits road construction and reconstruction in inventoried roadless areas and limits timber harvesting to projects designed for stewardship purposes. This includes timber harvests designed to protect habitat for threatened and endangered species, reduce the risk of uncharacteristically severe fires, or restore ecological structure, function, processes, or composition. Fuel treatments in inventoried roadless areas may be considered stewardship treatments and therefore permissible under the Roadless Rule.

3. California Spotted Owl Protected Activity Centers

California spotted owl protected activity centers (PACs) are unmapped land allocations. The standards and guidelines in this section provide direction for designating and managing California spotted owl PACs. PACs overlap other land allocations: standards and guidelines for PACs supercede standards and guidelines for land allocations in which PACs are located. Riparian conservation area standards and guidelines apply to PACs (or portions of PACs) in riparian areas and critical aquatic refuges except where the standards and guidelines for PACs place greater restrictions on management activities. Special management direction (see below) applies to fuel treatments in PACs located in the defense zone of the urban wildland intermix zone.

Designating California Spotted Owl PACs

Delineate California spotted owl protected activity centers (PACs) surrounding each territorial owl activity center detected on National Forest System lands since 1986. Owl activity centers are designated for all territorial owls based on: (1) the most recent documented nest site, (2) the most recent known roost site when a nest location remains unknown, and (3) a central point based on repeated daytime detections when neither nest or roost locations are known.

Delineate PACs to: (1) include known and suspected nest stands and (2) encompass the best available 300 acres of habitat in as compact a unit as possible. Select the best available habitat for PACs to incorporate: (1) two or more tree canopy layers; (2) trees in the dominant and co-dominant crown classes averaging 24 inches dbh or greater; (3) at least 70 percent tree canopy cover (including hardwoods); and (4) in

descending order of priority, CWHR classes 6, 5D, 5M, 4D, and 4M and other stands with at least 50 percent canopy cover (including hardwoods). Use aerial photography interpretation and field verification as needed to delineate PACs.

As additional nest location and habitat data become available, review boundaries of PACs and make adjustments as necessary to better include known and suspected nest stands and to encompass the best available 300 acres of habitat.

When activities are planned adjacent to non-national forest lands, check available databases for the presence of nearby California spotted owl activity centers on non-national forest lands. Delineate a 300-acre circular area centered on the activity center. Designate and manage any part of the circular 300-acre area that lies on national forest lands as a California spotted owl PAC.

As described under the forest-wide standards and guidelines, prior to undertaking vegetation treatments in California spotted owl habitat with unknown occupancy, conduct surveys in accordance with Pacific Southwest Region survey protocol. Designate California spotted owl protected activity centers where appropriate based on survey results.

When activities are planned within or adjacent to a PAC and the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location of the nest or activity center.

Maintain PACs regardless of California spotted owl occupancy status, unless habitat is rendered unsuitable by a catastrophic stand-replacing event and surveys conducted to protocol confirm non-occupancy.

California Spotted Owl PACs: Activity-Related Standards and Guidelines

Limited Operating Period

Maintain a limited operating period (LOP), prohibiting activities within approximately $\frac{1}{4}$ mile of the nest site during the breeding season (March 1 through August 31) unless surveys confirm that California spotted owls are not nesting. The LOP does not apply to existing road and trail use and maintenance or continuing recreation use, except where analysis of proposed projects or activities determines that either existing or proposed activities are likely to result in nest disturbance.

The LOP may be waived for individual projects or activities of limited scope and duration or when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location. Where a biological evaluation determines that a nest site will be shielded from planned activities by topographic features that minimize disturbance, the LOP buffer distance may be reduced.

The LOP may be waived where necessary to allow for early season prescribed burning in up to 5 percent of the California spotted owl PACs on a national forest per year.

The LOP may be modified or waived to assess the effects of prescribed fire and mechanical treatments on breeding owls as a formal adaptive management study developed in cooperation with the Pacific Southwest Research Station.

Fuel Treatments

In PACs located outside the defense zone of the urban wildland intermix zone: Limit stand-altering activities to reducing surface and ladder fuels through prescribed fire treatments. In forested stands with overstory trees 11 inches dbh and greater, design prescribed fire treatments that have an average flame length of 4 feet or less. Prior to burning, conduct hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), within a 1- to 2-acre area surrounding known nest trees as needed to protect nest trees and trees in their immediate vicinity.

In PACs located inside the defense zone of the urban wildland intermix zone: Prohibit mechanical treatments within a 500-foot radius buffer around the California spotted owl activity center. Allow prescribed burning within the 500-foot radius buffer. Prior to burning, conduct hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), within a 1- to 2-acre area surrounding known nest trees as needed to protect nest trees and trees in their immediate vicinity. The remaining area of the PAC may be mechanically treated to achieve the fuels reduction outcomes described for the general forest land allocation.

Conduct vegetation treatments in no more than 5 percent per year and 10 percent per decade of the California spotted owl PACs in the 11 Sierra Nevada national forests until a formal monitoring and adaptive management approach is developed in coordination with the Pacific Southwest Research Station. Monitor the number of PACs treated at a bio-regional scale. Update the total number of PACs to account for losses of PACs due to catastrophic events.

New Roads, Trails, Off Highway Vehicle Routes, Recreational Developments, and Other Developments

Evaluate proposals for new roads, trails, off highway vehicle routes, and recreational and other developments for their potential to disturb nest sites. Mitigate impacts where there is documented evidence of disturbance to the nest site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance).

4. Northern Goshawk Protected Activity Centers (PACs)

Northern goshawk protected activity centers (PACs) are unmapped land allocations. The standards and guidelines in this section provide direction for designating and managing northern goshawk PACs. PACs overlap other land allocations: standards and guidelines for PACs supercede standards and guidelines for land allocations in which PACs are located. Riparian conservation area standards and guidelines apply to PACs (or portions of PACs) in riparian areas and critical aquatic refuges except where the standards and guidelines for PACs place greater restrictions on management activities. Special management direction (see below) applies to fuel treatments in northern goshawk PACs located in the defense zone of the urban wildland intermix zone.

Designating Northern Goshawk PACs

Delineate northern goshawk protected activity centers (PACs) surrounding all known and newly discovered breeding territories detected on National Forest System lands. Designate northern goshawk PACs based upon the latest documented nest site and location(s) of alternate nests. If the actual nest site is not located, designate the PAC based on the location of territorial adult birds or recently fledged juvenile goshawks during the fledging dependency period.

Delineate PACs to: (1) include known and suspected nest stands and (2) encompass the best available 200 acres of forested habitat in the largest contiguous patches possible, based on aerial photography. Where suitable nesting habitat occurs in small patches, define PACs as multiple blocks in the largest best available patches within 0.5 miles of one another. Best available forested stands for PACs have the following characteristics: (1) trees in the dominant and co-dominant crown classes average 24 inches dbh or greater; (2) in westside conifer and eastside mixed conifer forest types, stands have at least 70 percent tree canopy cover; and (3) in eastside pine forest types, stands have at least 60 percent tree canopy cover. Non-forest vegetation (such as brush and meadows) should not be counted as part of the 200 acres.

As additional nest location and habitat data become available, review boundaries of PACs and make adjustments as necessary to better include known and suspected nest stands and to encompass the best available 200 acres of forested habitat.

When activities are planned adjacent to non-national forest lands, check available databases for the presence of nearby northern goshawk activity centers on non-national forest lands. Delineate a 200-acre circular area centered on the activity center. Designate and manage any part of the circular 200-acre area that lies on national forest lands as a northern goshawk PAC.

When activities are planned within or adjacent to a PAC and the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location of the nest or activity center.

Maintain PACs regardless of northern goshawk occupancy status, unless habitat is rendered unsuitable by a catastrophic stand-replacing event and surveys conducted to protocol confirm non-occupancy.

Northern Goshawk PACs: Activity-Related Standards and Guidelines

Limited Operating Period

Maintain a limited operating period (LOP), prohibiting activities within approximately ¼ mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. If the nest stand is unknown, either apply the LOP to a ¼-mile area surrounding the PAC or survey to determine the nest stand location. The LOP does not apply to existing road and trail use and maintenance or continuing recreation use, except where analysis of proposed projects or activities determines that either existing or proposed activities are likely to result in nest disturbance.

The LOP may be waived for individual projects or activities of limited scope and duration or when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location. Where a biological evaluation determines that a nest site will be shielded from planned activities by topographic features that minimize disturbance, the LOP buffer distance may be reduced.

The LOP may be waived where necessary to allow for early season prescribed burning in up to 5 percent of the northern goshawk PACs on a national forest per year.

New Roads, Trails, Off Highway Vehicle Routes, Recreational Developments, and Other Developments

Evaluate proposals for new roads, trails, off highway vehicle routes, and recreational and other developments for their potential to disturb nest sites. Mitigate impacts where there is documented evidence of disturbance to the nest site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance).

Fuel Treatments

In PACs located outside the defense zone of the urban wildland intermix zone: Limit stand-altering activities to reducing surface and ladder fuels through prescribed fire treatments. In forested stands with overstory trees 11 inches dbh and greater, design prescribed fire treatments that have an average flame length of 4 feet or less. Prior to burning, conduct hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), within a 1- to 2-acre area surrounding known nest trees as needed to protect nest trees and trees in their immediate vicinity.

In PACs located inside the defense zone of the urban wildland intermix zone: Prohibit mechanical treatments within a 500-foot radius buffer around nest trees. Allow prescribed burning within the 500-foot radius buffer. Prior to burning, conduct hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), within a 1- to 2-acre area surrounding known nest trees as needed to protect nest trees and trees in their immediate vicinity. The remaining area of the PAC may be mechanically treated to achieve the fuels reduction outcomes described for the general forest land allocation.

Conduct mechanical treatments in no more than 5 percent per year and 10 percent per decade of the northern goshawk PACs in the 11 Sierra Nevada national forests until a formal monitoring and adaptive management study is developed in coordination with the Pacific Southwest Research Station.

5. Great Gray Owl Protected Activity Centers (PACs)

Great gray owl protected activity centers (PACs) are unmapped land allocations. The standards and guidelines in this section provide direction for designating and managing great gray owl PACs. PACs overlap other land allocations: standards and guidelines for PACs supercede standards and guidelines for land allocations in which PACs are located. Riparian conservation area standards and guidelines apply to PACs (or portions of PACs) in riparian areas and critical aquatic refuges except where the standards and guidelines for PACs place greater restrictions on management activities.

Designating Great Gray Owl PACs

Establish and maintain a protected activity center (PAC) that includes the forested area and adjacent meadow around all known great gray owl nest stands. Delineate at least 50 acres of the highest quality nesting habitat (CWHR types 6, 5D, and 5M) available in the forested area surrounding the nest. Also include the meadow or meadow complex that supports the prey base for nesting owls.

Conduct additional surveys to established protocols to follow up reliable sightings of great gray owls.

Great Gray Owl PACs: Activity-Related Standards and Guidelines

Limited Operating Period

Apply a limited operating period (LOP), prohibiting vegetation management activities and road construction within ¼ mile of active great gray owl nest stands during the nesting period (typically March 1 to August 15). The LOP does not apply to: (1) existing road traffic and road maintenance, (2) trail uses, and (3) other recreational uses and activities, unless a biological evaluation documents that these activities will result in nest disturbance. The LOP may also be waived for projects of limited scope and duration.

New Roads, Trails, Off Highway Vehicle Routes, Recreational Developments, and Other Developments

Evaluate proposals for new roads, trails, off highway vehicle routes, and recreational and other developments for their potential to disturb nest sites. Mitigate impacts where there is documented evidence of disturbance to the nest site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance).

Grazing

In meadow areas of great gray owl PACs, maintain herbaceous meadow vegetation at least 12 inches in height and covering at least 90 percent of the meadow.

6. Forest Carnivore Den Sites

Forest carnivore den site buffers are unmapped land allocations. The standards and guidelines in this section provide direction for designating and managing forest carnivore den site buffers. Forest carnivore den site buffers overlap other land allocations: standards and guidelines for den site buffers supercede standards and guidelines for land allocations in which den sites are located. Riparian conservation area standards and guidelines apply to den site buffers (or portions of den site buffers) in riparian areas and critical aquatic refuges except where the standards and guidelines for den site buffers place greater restrictions on management activities. Special management direction (see below) applies to fuel treatments in den sites located in the urban wildland intermix zone.

Designating Forest Carnivore Den Sites

Fisher den sites are 700-acre buffers consisting of the highest quality habitat (CWHR size class 4 or greater and canopy cover greater than 60 percent) in a compact arrangement surrounding verified fisher birthing and kit rearing dens in the largest, most contiguous blocks available.

Marten den sites are 100-acre buffers consisting of the highest quality habitat in a compact arrangement surrounding the den site. CWHR types 6, 5D, 5M, 4D, and 4M in descending order of priority, based on availability, provide highest quality habitat for the marten.

Forest Carnivore Den Sites: Activity-Related Standards and Guidelines

Limited Operating Periods

Protect fisher den site buffers from disturbance with a limited operating period (LOP) from March 1 through June 30 for all new projects as long as habitat remains suitable or until another Regionally-approved management strategy is implemented. The LOP may be waived for individual projects of limited scope and duration, when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location.

Protect marten den site buffers from disturbance with a limited operating period (LOP) from May 1 through July 31 for all new projects as long as habitat remains suitable or until another Regionally-approved management strategy is implemented.

Evaluate the appropriateness of LOPs for existing uses in fisher and marten den site buffers during environmental analysis.

Fuel Treatments

Avoid fuel treatments in den site buffers to the extent possible. If areas within den site buffers must be treated to achieve fuels objectives for the urban wildland intermix zone, limit treatments to mechanical clearing of fuels. Treat ladder and surface fuels over 85 percent of the treatment unit to achieve fuels objectives. Use piling or mastication to treat surface fuels during initial treatment. Burning of piled debris is allowed. Prescribed fire may be used to treat fuels if no other reasonable alternative exists.

Roads, Trails, Off Highway Vehicle Routes, Recreational Developments, and Other Developments

Evaluate proposals for new roads, trails, off highway vehicle routes, and recreational and other developments for their potential to disturb den sites. Mitigate impacts where there is documented evidence of disturbance to the den site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance).

7. Old Forest Emphasis Areas

Old forest emphasis areas are mapped land allocations. The standards and guidelines in this section provide direction for managing old forest emphasis areas. Unmapped land allocations (such as PACs, den site buffers, riparian areas, and meadows) and the urban wildland intermix zone overlap old forest emphasis areas. Management standards and guidelines for PACs and den site buffers supercede standards and guidelines for old forest emphasis areas. Standards and guidelines for California spotted owl home range core areas are identical to those for old forest emphasis areas. Old forest emphasis area standards and guidelines apply to areas where the southern Sierra fisher conservation area overlaps with old forest emphasis areas. Where the urban wildland intermix zone overlaps with old forest emphasis areas, urban wildland intermix fuel treatment standards and guidelines supercede fuel treatment standards and guidelines for old forest emphasis areas. Management direction for overlapping riparian conservation areas, critical aquatic refuges, and meadows complements old forest emphasis area management direction; in these overlaps, the standards and guidelines of both allocations apply.

Description

Old forest emphasis areas are mapped land allocations shown on the Modified Alternative 8 map included in the FEIS. The record of decision has provisions for making minor adjustments to correct the boundaries of mapped land allocations, including old forest emphasis areas. (See Section C. *Map Errata* under Part VIII. *Implementation* in the Record Of Decision.)

Old Forest Emphasis Areas: Activity-Related Standards and Guidelines

Fuel Treatments

Give priority to restoring historic fire return intervals where possible. Emphasize fire restoration in pine and mixed conifer forests. In mixed conifer forests, fire return intervals vary by aspect and topographic position, with most frequent burning on south- and west-facing aspects.

Emphasize fuel treatments in stands at lower elevations with high fire hazard in the pine, mixed conifer, eastside pine, and eastside mixed conifer forest types. Emphasize fuel treatments on the upper two-thirds of south- and west-facing aspects near roads. Use mechanical treatments where fire managers determine a high potential for: (1) prescribed fire escape due to excessive fuel accumulations; (2) unacceptable smoke impacts; or (3) canopy cover and old forest structure loss due to excessive surface and ladder fuels.

Design mechanical fuel treatments to remove the material necessary to achieve the following outcomes:

- *Stands with less than 40 percent canopy cover:* Over 75 percent of the stand area, achieve an average live crown base height of 15 feet and an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions.
- *Stands with 40 to 70 percent canopy cover:* Over 75 percent of the stand area, achieve an average live crown base height of 20 feet and an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions.
- *Stands with greater than 70 percent canopy cover:* Over 75 percent of the stand area, achieve an average live crown base height of 25 feet and an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions.

To enhance stand heterogeneity and to maintain intact biological processes, particularly soil biota that may be affected by mechanical treatments, do not mechanically treat the remaining 25 percent of the stand area.

Where mechanical treatments are necessary, design treatments to achieve or approach the fuels outcomes described above by reducing surface and ladder fuels less than 12 inches dbh. Apply treatments to enhance stand heterogeneity. Allow incidental felling of trees between 12 and 20 inches dbh where required for operability. Retain felled trees on the ground where needed to achieve down woody material standards of 10 to 20 tons per acre in logs greater than 12 inches diameter at midpoint.

Do not reduce canopy cover in dominant and co-dominant trees by more than 10 percent across a stand following mechanical treatments. (For example, if canopy cover in a stand's dominant and co-dominant trees is 80 percent, retain at least 70 percent canopy cover in dominant and co-dominant trees following mechanical treatment.)

In westside forest types, where pre-treatment canopy cover in dominant and co-dominant trees is between 50 and 59 percent, design mechanical treatments to retain a minimum of 50 percent canopy cover. Do not reduce canopy cover in stands that currently have between 40 and 50 percent canopy cover in dominant and co-dominant trees, except where canopy cover reductions result from removing primarily shade-tolerant trees less than 6 inches dbh. In the eastside pine forest type, retain a minimum of 30 percent canopy cover.

Strategically placed area fuel treatments may be needed in old forest emphasis areas to minimize risks to human life and property, sensitive resources, or the old forest emphasis area from loss to wildfire. When treatments are necessary, prescribed fire is the first priority for achieving the fuels objectives. When prescribed fire will not achieve fuels objectives, use mechanical thinning as described in the preceding paragraphs to achieve the fuels objectives. When this treatment will not achieve the fuels objectives due to existing stand conditions, mechanical thinning of trees up to 20 inches dbh and canopy reductions of up to 20 percent (refer to mechanical treatment standards and guidelines for the threat zone) may be conducted in CWHR 4M and 4D stands to meet fuels reduction objectives.

Conduct an analysis of suitable owl habitat before applying mechanical treatments that remove trees up to 20 inches dbh and reduce canopy cover up to 20 percent in old forest emphasis areas. This type of treatment may only be used when sufficient suitable owl habitat exists within 1½ miles of a California spotted owl nest site or activity center to satisfy the requirements of a home range core area, as described

in the standards and guidelines for delineating California spotted owl home range core areas. This type of treatment may not be applied within 1½ miles of the nest site or activity center if the requirements for delineating a home range core area cannot be met. Document this site-specific analysis in the environmental analysis.

Retain all snags 15 inches or greater following stand-replacing events except to address imminent hazards to human safety. Following stand-replacing events, dead trees may be removed to the extent that project analysis recommends removal to benefit landscape conditions for old forest structure and function. Conduct the project analysis to determine varying snag retention levels, considering landscape position and site conditions (such as riparian areas and ridgetops), avoiding uniformity across large areas.

8. California Spotted Owl Home Range Core Areas

California spotted owl home range core areas are unmapped forest-wide land allocations. The standards and guidelines in this section provide direction for designating and managing California spotted owl home range core areas.

Home range core areas include California spotted owl PACs and overlap other mapped and unmapped land allocations. Where home range core areas overlap with northern goshawk PACs or den site buffers, standards and guidelines for northern goshawk PACs and den site buffers supercede standards and guidelines for California spotted owl home range core areas. Standards and guidelines for California spotted owl home range core areas are identical to those for old forest emphasis areas. Where home range core areas overlap with the southern Sierra fisher conservation area, standards and guidelines for California spotted owl home range core areas apply. Management direction for overlapping riparian conservation areas, meadows, and critical aquatic refuges complements California spotted owl home range core area management direction; in these overlaps, the standards and guidelines of both allocations apply.

Fuel treatment standards and guidelines for the defense zone (outside of wilderness areas and wild and scenic river areas) of the urban wildland intermix zone supercede fuel treatment standards and guidelines for California spotted owl home range core areas where these allocations overlap. Fuel treatment standards and guidelines for the threat zone (outside of wilderness areas and wild and scenic river areas) of the urban wildland intermix zone usually supercede fuel treatment standards and guidelines for California spotted owl home range core areas where these allocations overlap. However, fuel treatments within the threat zone must satisfy specific habitat requirements for home range core areas (refer to standards and guidelines for the threat zone).

Designating California Spotted Owl Home Range Core Areas

Establish a home range core area surrounding each territorial spotted owl activity center detected after 1986. The core area amounts to 20 percent of the area described by the sum of the average breeding pair home range plus one standard error. Home range core area sizes are as follows: 2,400 acres on the Hat Creek and Eagle Lake Ranger Districts of the Lassen National Forest, 1,000 acres on the Modoc, Inyo, Humboldt-Toiyabe, Plumas, Tahoe, Eldorado, Lake Tahoe Basin Management Unit and Stanislaus National Forests and on the Almanor Ranger District of Lassen National Forest, and 600 acres of the Sequoia and Sierra National Forests.

Use aerial photography to delineate the core area. Identify acreage for the entire core area on national forest lands. Delineate core areas to encompass the best available California spotted owl habitat in the closest proximity to the owl activity center. Select the best available contiguous habitat to incorporate: (1) two or more tree canopy layers; (2) trees in the dominant and co-dominant crown classes averaging 24 inches dbh or greater; and (3) in descending order of priority, CWHR classes 6, 5D, 5M, 4D and 4M and other stands with at least 50 percent tree canopy cover (including hardwoods). The acreage in the 300-acre PAC counts toward the total home range core area. Delineate core areas within 1.5 miles of the activity center.

When activities are planned adjacent to non-national forest lands, delineate circular core areas around California spotted owl activity centers on non-national forest lands. Using the best available habitat as described above, designate and manage any part of the circular core area that lies on national forest lands as a California spotted owl home range core area.

California Spotted Owl Home Range Core Areas: Activity-Related Standards and Guidelines

Fuel Treatments

Fuel treatment standards and guidelines for California spotted owl home range core areas are identical to those presented for old forest emphasis areas above, except for the urban wildland intermix.

9. Southern Sierra Fisher Conservation Area

The southern Sierra fisher conservation area is a mapped land allocation. The standards and guidelines in this section provide direction for managing the southern Sierra fisher conservation area. Unmapped allocations (such as PACs, den site buffers, riparian areas, and meadows) overlap the southern Sierra fisher conservation area. Standards and guidelines for PACs, den site buffers, and California spotted owl home range core areas supercede standards and guidelines for the southern Sierra fisher conservation area. Management direction for overlapping riparian conservation areas, meadows, and critical aquatic refuges complements southern Sierra fisher conservation area management direction; in these overlaps, the standards and guidelines of both allocations apply.

Fuel treatment standards and guidelines for the defense and threat zones (outside of wilderness areas and wild and scenic river areas) of the urban wildland intermix zone supercede standards and guidelines for the southern Sierra fisher conservation area where these allocations overlap.

Description

The southern Sierra fisher conservation area encompasses the known occupied range of the Pacific fisher in the Sierra Nevada. This consists of an elevational band from 4,500 feet to 8,000 feet on the Sierra and Sequoia National Forests.

The southern Sierra fisher conservation area is a mapped land allocations shown on the Modified Alternative 8 map included in the FEIS. The record of decision has provisions for making minor adjustments to correct the boundaries of mapped land allocations, including the southern Sierra fisher conservation area. (See Section C. *Map Errata* under Part VIII. *Implementation* in the Record Of Decision.)

Southern Sierra Fisher Conservation Area: Activity-Related Standards and Guideline

Manage the portions of the southern Sierra fisher conservation area that overlap with old forest emphasis areas (as mapped for Modified Alternative 8 of the FEIS: the map layer is available upon request) according to the standards and guidelines for old forest emphasis areas. Manage portions of the southern Sierra fisher conservation area that do not overlap with old forest emphasis areas according to the standards and guidelines for the general forest allocation. Because the effects of prescribed fire on key components of fisher habitat are uncertain, give preference to mechanical treatments over prescribed fire. However, prescribed fire may be applied to achieve restoration and regeneration objectives for fire-adapted giant sequoia.

In areas outside the urban wildland intermix zone, manage each planning watershed to support fisher habitat requirements. Retain 60 percent of each 5,000- to 10,000-acre watershed in CWHR size class 4 (average dbh of overstory trees between 11 and 24 inches) or greater and canopy cover greater than or equal to 60 percent.

Prior to vegetation treatments, identify important wildlife structures, such as large diameter snags and coarse woody material within the treatment unit. For prescribed fire treatments, use firing patterns, fire lines around snags and large logs, and other techniques to minimize effects on snags and large logs. Evaluate the effectiveness of these mitigation measures after treatment. Upon completion of the research project specified in the ROD, re-assess the use of prescribed fire in maintaining fisher habitat.

10. Urban Wildland Intermix Zone: Defense Zone

The defense zone of the urban wildland intermix zone overlaps with all other land allocations. The standards and guidelines in this section provide direction for treating fuels in the defense zone to prevent the loss of life and property from wildland fire by creating defensible space. Special standards and guidelines for California spotted owl and northern goshawk PACs and den site buffers apply in the defense zone to allow for fuels treatments. Standards and guidelines for the defense zone supercede standards and guidelines for old forest emphasis areas, California spotted owl home range core areas, and the southern Sierra fisher management area where these allocations overlap. Management direction for overlapping riparian areas, meadows, and critical aquatic refuges does not conflict with defense zone management direction; in these overlaps, the standards and guidelines of both allocations apply.

Designating the Defense Zone

The urban wildland intermix zone is shown on the Modified Alternative 8 map included in the FEIS. While this map displays an approximate location for the defense zone, each national forest is responsible for locally delineating the actual boundaries of the defense zone. Defense zones extend approximately ¼ mile from areas that have a high density (approximately one structure per 5 acres) of residences, commercial buildings, and administrative sites with facilities.

Defense Zone of the Urban Wildland Intermix Zone: Activity-Related Standards and Guidelines

Fuel Treatments

Design mechanical fuel treatments to remove the material necessary to achieve the following outcomes:

- *Stands with less than 40 percent canopy cover:* Over 90 percent of the stand area, achieve an average live crown base height of 15 feet and an average flame length of 4 feet or less if the stand was to burn under 90th percentile fire weather conditions.
- *Stands with 40 to 70 percent canopy cover:* Over 90 percent of the stand area, achieve an average live crown base height of 20 feet and an average flame length of 4 feet or less if the stand was to burn under 90th percentile fire weather conditions.
- *Stands with greater than 70 percent canopy cover:* Over 90 percent of the stand area, achieve an average live crown base height of 25 feet and an average flame length of 4 feet or less if the stand was to burn under 90th percentile fire weather conditions.

To enhance stand heterogeneity, do not mechanically treat the remaining 10 percent of the stand area.

Achieve the fuels outcomes described above through thinning from below to remove surface and ladder fuels.

11. Urban Wildland Intermix Zone: Threat Zone

The threat zone of the urban wildland intermix zone overlaps with all other land allocations. The standards and guidelines in this section provide direction for treating fuels in the threat zone to interrupt wildland fire spread and reduce fire intensity. Standards and guidelines for California spotted owl and northern goshawk PACs and den site buffers supercede standards and guidelines for the threat zone. Standards and guidelines for the threat zone supercede standards and guidelines for old forest emphasis areas, California spotted owl home range core areas, and the southern Sierra fisher management area where these allocations overlap. Management direction for overlapping riparian areas, meadows, and critical aquatic refuges does not conflict with threat zone management direction; in these overlaps, the standards and guidelines of both allocations apply.

Designating the Threat Zone

A threat zone of the urban wildland intermix zone is shown on the Modified Alternative 8 map included in the FEIS. While this map displays an approximate location for the threat zone, each national forest is responsible for locally delineating the actual boundaries of the threat zone. The threat zone normally buffers the defense zone: it extends approximately 1¼ mile out from the defense zone. In some cases, where structure density is less than one structure per 5 acres and greater than one structure per 40 acres, a threat zone may be delineated in the absence of a defense zone. The actual width of the threat zone is based on local fuel conditions, weather, topography, and existing barriers to fire spread.

Threat Zone of the Urban Wildland Intermix Zone: Activity-Related Standards and Guidelines

Fuel Treatments

Design mechanical fuel treatments to remove the material necessary to achieve the following outcomes:

- *Stands with less than 40 percent canopy cover:* Over 85 percent of the stand area, achieve an average live crown base height of 15 feet and an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions.
- *Stands with 40 to 70 percent canopy cover:* Over 85 percent of the stand area, achieve an average live crown base height of 20 feet and an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions.
- *Stands with greater than 70 percent canopy cover:* Over 85 percent of the stand area, achieve an average live crown base height of 25 feet and an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions.

To enhance stand heterogeneity, do not mechanically treat the remaining 15 percent of the stand area.

Design mechanical treatments to achieve the fuels outcomes described above through understory thinning to remove surface and ladder fuels up to 20 inches dbh. Focus treatments on removing suppressed and intermediate trees. Apply treatments to enhance stand heterogeneity. When conducting treatments in dense stands with uniform tree size and spacing, introduce heterogeneity into such stands by creating small (typically less than 1 acre), irregularly-spaced openings. Canopy cover reductions may be needed

to meet fuels objectives, but do not exceed a 20 percent reduction in the dominant and co-dominate trees. (For example, a stand's canopy cover may be reduced from a pre-treatment level of 70 percent down to 50 percent to meet fuels objectives.)

In westside forest types, where pre-treatment canopy cover is between 50 and 59 percent, design mechanical treatments to retain a minimum of 50 percent canopy cover in dominant and co-dominant trees. In stands that currently have between 40 and 50 percent canopy cover, do not reduce canopy cover except where canopy cover reductions result from removing primarily shade-tolerant trees less than 6 inches dbh. In the eastside pine forest type, retain a minimum of 30 percent canopy cover.

For prescribed fire treatments, use multiple entries as needed to achieve fuels management objectives, up to two burns per decade and four burns over 20 years.

Conduct an analysis of suitable owl habitat around activity centers before applying the mechanical treatments described above. If sufficient suitable owl habitat exists within 1½ miles of the activity center to satisfy the home range core area delineation standards and guidelines, the area outside the PAC may be treated as described above. The mechanical treatments described above may not be applied within 1½ miles of the nest site or activity center where the requirements of a home range core area cannot be met; however, these areas may be treated according to the mechanical fuel treatment standards and guidelines for old forest emphasis areas. Document this site-specific analysis in the environmental analysis.

12. General Forest

The general forest land allocation lies outside all of the land allocations described above. Standards and guidelines for all other allocations supercede general forest standards and guidelines where overlaps occur. Also note that forest-wide standards for vegetation and fuels treatments in plantations, shrub lands, and forested stands classified as CWHR 5M, 5D, and 6 apply in the general forest.

Description

The general forest is a mapped land allocations shown on the Modified Alternative 8 map included in the FEIS. The record of decision has provisions for making minor adjustments to correct the boundaries of mapped land allocations, including the general forest. (See Section C. *Map Errata* under Part VIII. *Implementation* in the record of decision.)

Activity-Related Standards and Guidelines

Fuel Treatments

Design mechanical fuel treatments to removing the material necessary to achieve the following outcomes:

- *Stands with less than 40 percent canopy cover:* Over 75 percent of the stand area, achieve an average live crown base height of 15 feet and an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions.
- *Stands with 40 to 70 percent canopy cover:* Over 75 percent of the stand area, achieve an average live crown base height of 20 feet and an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions.
- *Stands with greater than 70 percent canopy cover:* Over 75 percent of the stand area, achieve an average live crown base height of 25 feet and an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions.

To enhance stand heterogeneity, do not mechanically treat the remaining 25 percent of the stand area.

Design mechanical treatments to achieve the fuels outcomes described above through understory thinning to remove surface and ladder fuels up to 20 inches dbh. Focus treatments on removing suppressed and intermediate conifer trees. Apply treatments to enhance stand heterogeneity. When conducting treatments in dense stands with uniform tree size and spacing, introduce heterogeneity into such stands by creating small (typically less than one acre), irregularly-spaced openings. Canopy cover reductions may be needed to meet fuels objectives, but do not exceed a 20 percent reduction in dominant and co-dominant trees. (For example, a stand's canopy cover may be reduced from a pre-treatment level of 70 percent down to 50 percent to meet fuels objectives.)

In westside forest types, where pre-treatment canopy cover is between 50 and 59 percent, design mechanical treatments to retain a minimum of 50 percent canopy cover in dominant and co-dominant trees. In stands that currently have between 40 and 50 percent canopy cover, do not reduce canopy cover of the dominant and co-dominant trees during fuels treatments, except where canopy cover reductions

result from removing primarily shade-tolerant trees less than 6 inches dbh. In the eastside pine forest type, retain a minimum of 30 percent canopy cover.

For prescribed fire treatments, use multiple entries as needed to achieve fuels management objectives, up to two burns per decade and four burns over 20 years.

13. Critical Aquatic Refuges

Critical aquatic refuges overlap with other land allocations. The standards and guidelines for riparian conservation areas apply in critical aquatic refuges (see section 14. below) except in cases where the standards and guidelines of the overlapping land allocation place greater restrictions on management activities. For example, standards and guidelines for critical aquatic refuges allow mechanical treatments (based on consistency with riparian conservation objectives). However, fuel treatments in a California spotted owl PAC (outside the defense zone of the urban wildland intermix zone) in a critical aquatic refuge are limited to prescribed burning only, consistent with the more restrictive standards and guidelines for fuel treatments in PACs.

Description

Critical aquatic refuges (CARs) are subwatersheds, generally ranging between 10,000 to 40,000 acres, with some as small 500 acres and some as large as 100,000 acres, that contain either:

- known locations of threatened, endangered, or sensitive species,
- highly vulnerable populations of native plant or animal species, or
- localized populations of rare native aquatic- or riparian-dependent plant or animal species.

Critical aquatic refuges are shown on maps in Appendix I of the FEIS. They are generally too small to be displayed on the Modified Alternative 8 map included in the FEIS.

As part of landscape analysis, the boundaries of CARs could be refined based on the findings from conservation assessments or verification of the presence and condition of habitat for threatened, endangered, and sensitive species. Additional CARs could be added by individual national forests.

Critical Aquatic Refuges: Activity-Related Standards and Guidelines

Standards and guidelines for critical aquatic refuges are identical to those presented for riparian conservation areas below but apply to the entire mapped area.

Mining Standards and Guidelines Specific to Critical Aquatic Refuges

Determine which critical aquatic refuges or areas within critical aquatic refuges are suitable for mineral withdrawal. Propose these areas for withdrawal from location and entry under U.S. mining laws, subject to valid existing rights, for a term of 20 years.

Approve mining-related plans of operation if measures are implemented that contribute toward the attainment or maintenance of aquatic management strategy goals.

14. Riparian Conservation Areas

Riparian conservation areas overlap all land allocations. The standards and guidelines for riparian conservation areas apply in these areas except in cases where the standards and guidelines of the overlapping land allocation place greater restrictions on management activities. For example, riparian conservation area standards and guidelines allow mechanical treatments (based on consistency with riparian conservation objectives). However, where a riparian conservation area overlaps with a California spotted owl PAC (outside the defense zone of the urban wildland intermix zone), treatments are limited to prescribed burning only, consistent with the more restrictive standards and guidelines for fuel treatments in PACs.

Designating Riparian Conservation Areas

Designate riparian conservation area (RCA) widths as listed in Table II.C.1 below. RCA widths shown in Table II.C.1 may be adjusted at the project level if a landscape analysis has been completed and a site-specific RCO analysis demonstrates a need for different widths.

Use a peer review process for vegetation treatments or other activities proposed within CARs and RCAs that are likely to significantly affect aquatic resources. (The peer review process is described in detail in Part I of this Appendix.) Conduct peer reviews for projects that propose ground-disturbing activities in more than 25 percent of the RCA or more than 15 percent of a CAR.

Table II.C.1. Riparian conservation area widths by stream type.

STREAM TYPE	WIDTH OF THE RIPARIAN CONSERVATION AREA
Perennial Streams	300 feet on each side of the stream, measured from the bank full edge of the stream
Seasonally Flowing Streams (includes ephemerals with defined stream channel or evidence of scour)	150 feet on each side of the stream, measured from the bank full edge of the stream
Streams In Inner Gorge¹	Top of inner gorge
Special Aquatic Features² or Perennial Streams with Riparian Conditions extending more than 150 feet from edge of streambank or Seasonally Flowing streams with riparian conditions extending more than 50 feet from edge of streambank	300 feet from edge of feature or riparian vegetation, whichever width is greater
Other hydrological or topographic depressions without a defined channel.	RCA width and protection measures determined through project level analysis

1. Inner gorge is defined by stream adjacent slopes greater than 70 percent gradient

2. Special Aquatic Features include: lakes, meadows, bogs, fens, wetlands, vernal pools, and springs

Riparian Conservation Areas: Activity-Related Standards and Guidelines

By their nature, the Aquatic Management Strategy (AMS) goals (detailed in Part I of this Appendix) do not provide the necessary detail for prescribing management practices at a site-specific scale. Where a proposed project encompasses a riparian conservation area (or critical aquatic refuge), conduct a site-specific project area analysis to determine the appropriate level of management within the riparian conservation area (RCA) (or critical aquatic refuge, CAR). Determine the type and level of allowable management activities by assessing how proposed activities measure against the riparian conservation objectives (RCOs) and their associated standards and guidelines. Implement other related standards and guidelines appropriate to the project and include them in documentation of meeting RCOs. These may include standards and guidelines for road management, grazing management, mining, or vegetation management presented in other parts of this Appendix or existing forest plans. Consider the protection of human life and property in implementing the AMS.

The RCOs serve as a checklist for evaluating management prescriptions to determine if a proposed activity will move an area toward the desired conditions described by the AMS goals. Analyze all RCOs and their associated standards and guidelines for projects in RCAs or CARs. As part of the analysis, consider physical factors, such as soil characteristics, geology, slope, stream characteristics, and biological factors, such as aquatic- and riparian-dependent species present, their habitat needs, and the ability of the existing environment to provide needed habitat.

RIPARIAN CONSERVATION OBJECTIVE #1: Ensure that identified beneficial uses for the water body are adequately protected. Identify the specific beneficial uses for the project area, water quality goals from the Regional Basin Plan, and the manner in which the standards and guidelines will protect the beneficial uses.

(RCO #1 is linked to the following AMS goals: #1: Water Quality; #2: Species Viability; #7: Watershed Condition)

Standards and Guidelines Associated with RCO #1:

Implement project appropriate Best Management Practices and monitor their effectiveness following protocols outlined in “Investigating Water Quality in the Pacific Southwest Region: Best Management Practices Evaluation Program” (USDA-FS, PSW Region 1992).

For waters designated as “Water Quality Limited” (Clean Water Act Section 303(d)), implement appropriate State mandates for the water body, such as Total Maximum Daily Load (TMDL) protocols.

Conduct project-specific cumulative watershed effects analysis following Regional procedures or other appropriate scientific methodology to meet NEPA requirements.

Implement soil quality standards for soil loss, detrimental soil compaction, and organic matter retention to minimize the risk of sediment delivery to aquatic systems from management activities. Ensure that management-related activities, including roads, skid trails, landings, trails, or other activities, do not result in detrimental soil compaction on more than 5 percent of the RCA or 10 percent of the area in CARs. Measure compaction using the procedures outlined in Appendix F of the FEIS.

Identify existing and potential sources of sediment delivery to aquatic systems. Implement preventive and restoration measures, such as modifying management activities, increasing ground cover, reducing

the extent of compacted surfaces, or revegetating disturbed sites to reduce or eliminate sediment delivery from these sources to aquatic systems.

Evaluate new proposed management activities within CARs and RCAs during environmental analysis to determine consistency with the riparian conservation objectives at the project level and the AMS goals for the landscape. Ensure that appropriate mitigation measures are implemented to (1) minimize the risk of activity-related sediment entering aquatic systems, and (2) minimize impacts to habitat for aquatic- or riparian-dependent plant and animal species.

Identify existing uses and activities in CARs and RCAs during landscape analysis. Evaluate existing management activities to determine consistency with RCOs during project-level analysis. Develop and implement actions needed for consistency with RCOs.

Ensure that management activities do not adversely affect water temperatures necessary for local aquatic- and riparian-dependent species assemblages.

Limit pesticide applications to cases where project level analysis indicates that pesticide applications are consistent with riparian conservation objectives. Prohibit application of pesticides to livestock in RCAs and CARs.

Avoid pesticide applications within 500 feet of known occupied sites for the California red-legged frog, Cascade frog, Yosemite toad, foothill yellow-legged frog, mountain yellow-legged frog, and northern leopard frog unless environmental analysis documents that pesticides are needed to restore or enhance habitat for these amphibian species.

Prohibit storage of fuels and other toxic materials within RCAs and CARs except at designated administrative sites. Prohibit refueling within RCAs and CARs unless there are no other alternatives. Ensure that spill plans are reviewed and up-to-date.

RIPARIAN CONSERVATION OBJECTIVE #2: Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic-dependent species.

(RCO #2 is linked to the following AMS Goals: #2: Species Viability; #3: Plant and Animal Community Diversity; #4: Special Habitats; #5: Watershed Connectivity; #6: Floodplains and Water Tables; #8: Streamflow Patterns and Sediment Regimes; #9: Streambanks and Shorelines)

Standards and Guidelines Associated with RCO #2:

Maintain and restore the hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features by identifying roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths. Implement corrective actions where necessary to restore connectivity.

Ensure that culverts or other stream crossings do not create barriers to upstream or downstream passage for aquatic-dependent species. Locate water drafting sites to avoid adverse effects to in stream flows and depletion of pool habitat. Where possible, maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features.

Prior to activities that could affect streams, determine if relevant geomorphic characteristics, including bank angle, channel bank stability, bank full width-to-depth ratio, embeddedness, channel-floodplain connectivity, residual pool depth, or channel substrate, are within the range of natural variability for the reference stream type as described in the Pacific Southwest Region Stream Condition Inventory protocol. If properties are outside the range of natural variability, implement restoration actions that will result in an upward trend.

Prevent disturbance to meadow-associated streambanks and natural lake and pond shorelines caused by resource activities (for example, livestock, off-highway vehicles, and dispersed recreation) from exceeding 20 percent of stream reach or 20 percent of natural lake and pond shorelines. Disturbance includes bank sloughing, chiseling, trampling, and other means of exposing bare soil or cutting plant roots. This standard does not apply to developed recreation sites and designated off-highway vehicle routes.

In stream reaches occupied by, or identified as “essential habitat” in the conservation assessment for, the Lahonton and Paiute cutthroat trout and the Little Kern golden trout, limit streambank disturbance from livestock to 10 percent of the occupied or “essential habitat” stream reach. (Conservation assessments are described in the record of decision.) Cooperate with State and Federal agencies to develop streambank disturbance standards for threatened, endangered, and sensitive species. Use the regional streambank assessment protocol. Implement corrective action where disturbance limits have been exceeded.

Determine if the age class, structural diversity, composition, and cover of riparian vegetation are within the range of natural variability for the vegetative community. If outside the range of natural variability, implement restoration actions that will result in an upward trend. Actions could include restoration of aspen or other riparian vegetation where conifer encroachment is identified as a problem.

Cooperate with Federal, Tribal, State and local governments to secure in stream flows needed to maintain, recover, and restore riparian resources, channel conditions, and aquatic habitat. Maintain in stream flows to protect aquatic systems to which species are uniquely adapted. Minimize the effects of stream diversions or other flow modifications from hydroelectric projects on threatened, endangered, and sensitive species and essential habitat as identified in conservation assessments. (Conservation assessments are described in the record of decision.)

During relicensing of Federal Energy Regulatory Commission (FERC) hydroelectric projects, evaluate modifications by the project to the natural hydrograph. Determine and recommend in stream flow requirements and habitat conditions that maintain, enhance, or restore all life stages of native aquatic species, and that maintain or restore riparian resources, channel integrity, and fish passage. Provide written and timely license conditions to FERC. Coordinate relicensing projects with the appropriate State and Federal agencies.

For exempt hydroelectric facilities on national forest lands, ensure that special use permit language provides adequate in stream flow requirements to maintain, restore, or recover favorable ecological conditions for local riparian- and aquatic-dependent species.

RIPARIAN CONSERVATION OBJECTIVE #3: Ensure a renewable supply of large down logs that: (1) can reach the stream channel and (2) provide suitable habitat within and adjacent to the RCA.

(RCO #3 is linked to the following AMS goals: #2: Species Viability; #3: Plant and Animal Community Diversity)

Standards and Guidelines Associated with RCO #3:

Determine if the level of coarse large woody debris (CWD) is within the range of natural conditions in terms of frequency and distribution and is sufficient to sustain stream channel physical complexity and stability. If CWD levels are deficient, ensure proposed management activities, when appropriate, contribute to the recruitment of CWD. Burning prescriptions should be designed to retain CWD; however short-term reductions below either the soil quality standards or standards in species management plans may result from prescribed burning within strategically placed treatment areas or the urban wildland intermix zone.

In plantations within RCAs or CARs, determine if the plantation will be able to provide a sufficient supply of standing trees suitable for large wood recruitment. If there is not sufficient wood for recruitment, develop a restoration program that will provide standing trees of the appropriate size in the RCA or CAR. In developing the restoration program, ensure that proposed activities are consistent with the riparian conservation objectives.

RIPARIAN CONSERVATION OBJECTIVE #4: Ensure that management activities, including fuels reduction actions, within RCAs and CARs enhance or maintain physical and biological characteristics associated with aquatic- and riparian-dependent species.

(RCO #4 is linked to the following AMS Goals: #2: Species Viability, #7: Watershed Condition)

Standards and Guidelines Associated with RCO #4:

Within CARs, in occupied habitat or “essential habitat” as identified in conservation assessments for threatened, endangered, or sensitive species, evaluate the appropriate role, timing, and extent of prescribed fire. Avoid direct lighting within riparian vegetation; prescribed fires may back into riparian vegetation areas. Develop mitigation measures to avoid impacts to these species whenever ground-disturbing equipment is used.

Use screening devices for water drafting pumps. (Fire suppression activities are exempt). Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, from aquatic habitats.

Design prescribed fire treatments to minimize disturbance of ground cover and riparian vegetation in RCAs. In burn plans for project areas that include, or are adjacent to RCAs, identify mitigation measures to minimize the spread of fire into riparian vegetation. In determining which mitigation measures to adopt, weigh the potential harm of mitigation measures, for example fire lines, against the risks and benefits of prescribed fire entering riparian vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could be damaging to habitat or long-term function of the riparian community.

Where catastrophic events, such as drought, fire, flooding, wind, or insect damage, result in degraded stand conditions, allow salvage harvesting and fuelwood cutting in RCAs and CARs consistent with the assessment of the RCOs for the area. Ensure that present and future woody debris needs are met.

Post-wildfire management activities in RCAs and CARs should emphasize enhancing native vegetation cover, stabilizing channels by non-structural means, minimizing adverse effects from the existing road network, and carrying out activities identified in landscape analyses. Post-wildfire operations shall minimize the exposure of bare soil.

Allow mechanical ground disturbing fuels treatments, hazard tree removal, salvage harvest, or commercial fuelwood cutting within RCAs or CARs when the activity is consistent with RCOs. Projects providing for public health and safety, such as the felling of hazard trees or fuel reduction activities within the defense zone of the urban wildland intermix zones, are permitted. Utilize low ground pressure equipment, helicopters, over the snow logging, or other non-ground disturbing actions to operate off of existing roads when needed to achieve RCOs. Prior to removing trees within RCAs or CARs, determine if existing down wood is sufficient to sustain the stream channel physical complexity and stability required to maintain or enhance the aquatic- and riparian-dependent community. Ensure that existing roads, landings, and skid trails meet Best Management Practices. Minimize the construction of new skid trails or roads for access into RCAs for fuel treatments, salvage harvest, commercial fuelwood cutting, or hazard tree removal.

Prior to implementing ground disturbing activities within suitable habitat for the California red-legged frog, Cascade frog, Yosemite toad, foothill yellow-legged frog, mountain yellow-legged frog, and northern leopard frog:

- assess and document aquatic conditions using the Pacific Southwest Region Stream Condition Inventory protocol, and
- develop mitigation measures (such as timing of activities, limited operating seasons, avoidance) to avoid impacting these species.

During fire suppression activities, consider impacts to aquatic- and riparian-dependent resources. Where possible, locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of RCAs or CARs. During presuppression planning, determine guidelines for suppression activities, including avoidance of potential adverse effects to aquatic- and riparian-dependent species as a goal.

Assess roads, trails, OHV trails and staging areas, developed recreation sites, dispersed campgrounds, special use permits, grazing permits, and day use sites during landscape analysis. Identify conditions that degrade water quality or habitat for aquatic- and riparian-dependent species. At the project level, determine if use is consistent with other standards and guidelines or desired conditions. If inconsistent, modify the use through redesign, rehabilitation, relocation, closure, or re-directing the use to a more suitable location.

Require solid waste facilities (such as waste rock and tailings dumps) to be located outside riparian conservation areas. Where no reasonable alternative to locating these mine waste facilities in riparian conservation areas exists, locate and design them with the goal of ensuring mine waste facility stability and preventing potentially toxic releases. Ensure the following measures are applied: (1) analyze mine waste material using the best conventional sampling methods and analytical techniques to determine its chemical and physical stability characteristics; (2) locate and design mine waste facilities using best conventional techniques to ensure mass stability and prevent acid or toxic material releases; (3) ensure

that reclamation and reclamation bonds are sufficient to ensure long-term chemical and physical stability of mine waste facilities; and (4) monitor mine waste facilities after operations have ceased to ensure that chemical and physical conditions are consistent with aquatic management strategy goals.

Allow saleable mineral activities, such as sand and gravel mining and extraction, in riparian conservation areas only if measures that protect the integrity of aquatic, riparian meadow ecosystems are implemented.

RIPARIAN CONSERVATION OBJECTIVE #5: Preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, bogs, fens, and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas.

(RCO #5 is linked to the following AMS goals: #1: Water Quality, #2 Species Viability, #3 Plant and Animal Community Diversity, #4 Special Habitats; #7: Watershed Condition; #9: Stream Banks and Shorelines)

Standards and Guidelines Associated with RCO #5:

Assess the hydrologic function of meadow habitats and other special aquatic features during range management analysis. Ensure that characteristics of special features are, at a minimum, at Proper Functioning Condition, as defined in the appropriate Technical Reports: (1) “Process for Assessing PFC” TR 1737-9 (1993), “PFC for Lotic Areas” USDI TR 1737-15 (1998) or (2) “PFC for Lentic Riparian-Wetland Areas” USDI TR 1737-11 (1994).

Prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock, humans, and wheeled vehicles. Criteria for defining bogs and fens include, but are not limited to, presence of: (1) sphagnum moss (*Spagnum spp.*), (2) mosses belonging to the genus *Meessia*, and (3) sundew (*Drosera spp.*) Complete initial plant inventories of bogs and fens within active grazing allotments prior to re-issuing permits.

Locate new facilities for gathering livestock and pack stock outside of meadows and riparian conservation areas. During landscape analysis, evaluate and consider relocating existing livestock facilities outside of meadows and riparian areas (RCA42). Prior to re-issuing grazing permits, assess the compatibility of livestock management facilities located in riparian conservation areas with riparian conservation objectives.

Under season-long grazing:

- For meadows in early seral status: limit livestock utilization of grass and grass-like plants to 30 percent (or minimum 6-inch stubble height).
- For meadows in late seral status: limit livestock utilization of grass and grass-like plants to a maximum of 40 percent (or minimum 4-inch stubble height).

Determine ecological status on all key areas monitored for grazing utilization prior to establishing utilization levels. Use Regional ecological scorecards and range plant list in regional range handbooks to determine ecological status. Analyze meadow ecological status every 3 to 5 years. If meadow ecological

status is determined to be moving in a downward trend, modify or suspend grazing. Include ecological status data in a spatially explicit Geographical Information System database.

Under intensive grazing systems (such as rest-rotation and deferred rotation) where meadows are receiving a period of rest, utilization levels can be higher than the levels described above if the meadow is maintained in late seral status and meadow-associated species are not being impacted. Degraded meadows (such as those in early seral status with greater than 10 percent of the meadow area in bare soil and active erosion) require total rest from grazing until they have recovered and have moved to mid- or late seral status.

The grazing standards specified in standard and guideline FW-G04B (above) may be modified to assess the effects of grazing intensity and frequency on willow flycatcher site occupancy or demography. Such modifications must be part of a formal management study developed in cooperation with the Pacific Southwest Research Station.

Limit browsing to no more than 20 percent of the annual leader growth of mature riparian shrubs (including willow and aspen) and no more than 20 percent of individual seedlings. Remove livestock from any area of an allotment when browsing indicates a change in livestock preference from grazing herbaceous vegetation to browsing woody riparian vegetation. Herd sheep away from woody riparian vegetation at all times.

RIPARIAN CONSERVATION OBJECTIVE #6: Identify and implement restoration actions to maintain, restore or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species.

(RCO # 6 is linked to all AMS goals.)

Recommend and establish priorities for restoration practices in: (1) areas with compaction in excess of soil quality standards, (2) areas with lowered water tables, or (3) areas that are either actively down cutting or that have historic gullies. Identify other management practices, for example, road building, recreational use, grazing, and timber harvests, that may be contributing to the observed degradation.

Reclaim abandoned mine sites that are degrading aquatic riparian and meadow ecosystems. First priority is to reclaim sites with hazardous or toxic substances located within CARs and RCAs.

15. Yosemite Toad Habitat

Activity-Related Standards and Guidelines

Exclude livestock (including pack stock and saddle stock) from standing water and saturated soils in wet meadows and associated streams and springs occupied by Yosemite toads or identified as “essential habitat” in the conservation assessment for the Yosemite toad during the breeding and rearing season (as determined locally). If physical exclusion of livestock, such as fencing, is impractical, then exclude grazing from the entire meadow until the meadow has been dry for 2 weeks. Wet meadows are defined as relatively open meadows with low to moderate amounts of woody vegetation that have standing water on June 1 or for more than 2 weeks following snow melt. Determine if the meadow has standing water and saturated soils after June 1st; if these conditions do not persist in the meadow for more than 2 weeks, allow grazing only in those portions of the meadow where dry conditions exist.

Monitor a sample of occupied Yosemite toad sites to: (1) assess habitat conditions and (2) assess Yosemite toad occupancy and population dynamics. Based on the monitoring data, modify or suspend grazing if Yosemite toad conservation is not being accomplished. These grazing restrictions may be modified through formal adaptive management studies, developed in cooperation with the Pacific Southwest Research Station, designed to assess the effects of grazing intensity and frequency on Yosemite toad habitat conditions and site occupancy.

Conduct surveys of unoccupied suitable habitat for the Yosemite toad within this species’ historic range to determine presence of Yosemite toads. Complete surveys of these areas within 3 years of this record of decision. If surveys are not completed within the 3- year period, consider unsurveyed meadows as occupied habitat and apply the restrictions for excluding livestock described in the preceding paragraph.

16. Willow Flycatcher Habitat

Description

Standards and guidelines for conserving the willow flycatcher are based on: (1) the 82 known willow flycatcher sites in the Sierra Nevada national forests, (2) occupied willow flycatcher habitat, and (3) emphasis habitat. Occupied habitats are meadows or riparian sites with documented willow flycatcher occupancy, unless: (1) multiple surveys, completed to protocol, document a lack of occupancy; (2) all documented occurrences are outside the regional survey protocol for determining willow flycatcher occupancy during the breeding season; or (3) habitat type conversion has occurred. Emphasis habitat is defined as meadows larger than 15 acres that have standing water on June 1 and a deciduous shrub component.

Willow Flycatcher Habitat: Activity-Related Standards and Guidelines

Evaluate proposals for new concentrated stock areas (for example, livestock handling and management facilities, pack stations, equestrian stations, and corrals) located within 5 miles of occupied willow flycatcher habitat. Apply a broad landscape-level analysis in the biological evaluation for the project to determine if such action will increase brood parasitism pressure by the brown-headed cowbird.

As part of landscape analysis, give priority to meadow restoration opportunities near or adjacent to known willow flycatcher sites.

To the extent possible, construct no new roads in potential willow flycatcher habitat. Potential willow flycatcher habitat includes: (1) occupied willow flycatcher habitat, (2) known willow flycatcher sites, (3) emphasis habitat, and (4) small, wet woody meadows (meadows less than 15 acres that have standing water on June 1 and a deciduous shrub component).

Beginning in 2001, initiate a 4-year cycle for conducting willow flycatcher surveys in all 82 known willow flycatcher sites. In the first year, conduct willow flycatcher surveys to established protocols in all 82 known willow flycatcher sites. In the second year, conduct surveys in the known sites where willow flycatchers were not found in the first-year survey. Surveys are not conducted in the third and fourth years of the cycle of all known sites. After the fourth year, repeat the 4-year survey cycle of all known sites.

If willow flycatchers are detected during the surveys of known willow flycatcher sites, eliminate livestock grazing in the entire meadow (to the forested or other upland vegetation edge), beginning 1 calendar year after the detection in this occupied known site. Use permanent or electrical fencing or otherwise ensure that livestock avoid these sites. If willow flycatchers are not detected during the surveys of known willow flycatcher sites, allow late season grazing at utilization levels based on habitat condition of these unoccupied known sites. Beginning in 2003, prohibit livestock grazing in meadows of the 82 known willow flycatcher sites where surveys have not been completed.

In unoccupied known willow flycatcher sites where late-season grazing is allowed, annually monitor utilization of riparian vegetation using regional range analysis and planning guides. Every 3 years, monitor willow flycatcher habitat using the following criteria: (1) rooting depth cores for meadow condition, (2) point intercepts for shrub foliar density, and (3) strip transects for shrub recruitment and

cover. Include meadow condition assessments in geographical information systems (GIS) coverages. If habitat conditions in unoccupied known willow flycatcher sites are not supporting the willow flycatcher or are trending downward, modify or suspend grazing in these areas.

Within 3 years of signing of the record of decision for the Sierra Nevada Forest Plan Amendment Project, survey emphasis habitat within 5 miles of the 82 known willow flycatcher sites to determine willow flycatcher occupancy. Use established protocols to conduct these surveys. If these surveys detect willow flycatchers, only allow late season grazing at utilization levels assessed according to habitat condition in these occupied emphasis sites. Subsequently include these occupied emphasis sites in the 4-year survey cycle for known willow flycatcher sites described above. In addition, survey emphasis habitat within 5 miles of these new occupied sites. In emphasis habitats where these surveys do not detect willow flycatchers, apply the grazing standard and guideline for meadows (the fourth standard and guideline described under RCO #5 in section 14. *Riparian Conservation Areas*), and repeat the surveys in these areas every 3 years. If willow flycatcher surveys of emphasis habitat within 5 miles of the 82 known willow flycatcher sites are not completed within 5 years, only allow late season grazing in these emphasis habitats.

Apply late-season grazing in known willow flycatcher sites where flycatchers are not detected and in occupied willow flycatcher emphasis sites during the willow flycatcher breeding season, which extends from June 1 to August 31. These dates may be modified when multi-year monitoring data support different dates for a particular breeding location.

Evaluate site condition of known sites and emphasis habitat. Those sites that no longer contain water on June 1 and lack a deciduous shrub component may be removed from the conservation network.

The grazing standards and guidelines described in this section may be modified under a formal management study, developed in cooperation with the Pacific Southwest Region Research Station, to assess the effects of grazing intensity and frequency on willow flycatcher site occupancy or demography.