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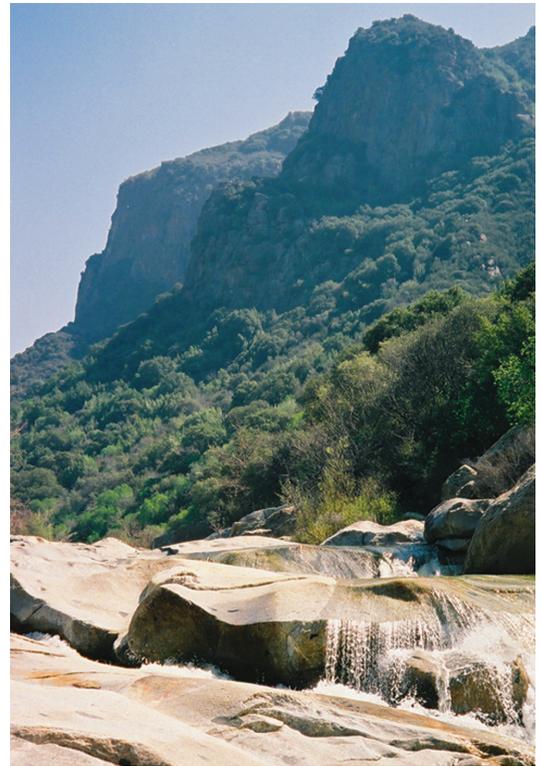
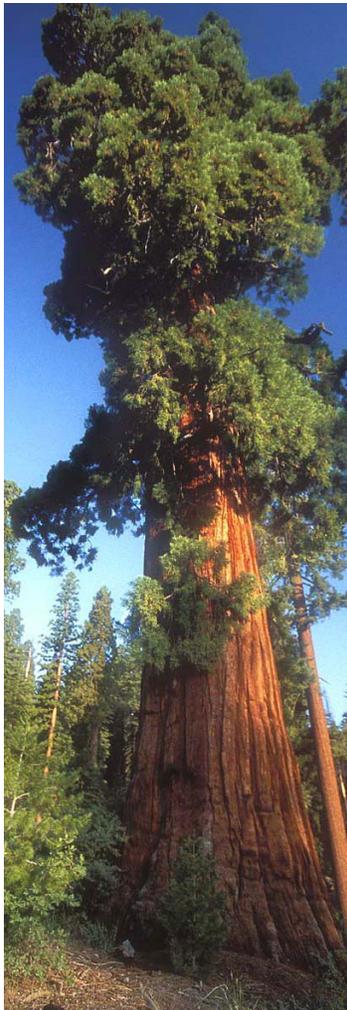
Forest Service

Sequoia
National Forest

August 2012



Giant Sequoia National Monument Management Plan





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Part 1—Vision

Purpose of the Monument Plan

The purpose of the Giant Sequoia National Monument Management Plan (Monument Plan) is to provide overall strategic guidance for managing the Giant Sequoia National Monument (Monument). The unique and special features of the Monument—the giant sequoia groves, the ecosystems that support them, and the other objects of interest—are what make the Monument what it is: a special area that merits careful management, protection, and preservation. This plan provides for the protection of the objects of interest while encouraging continued public and recreation access and use consistent with the purposes of the Monument (Clinton 2000, p. 24097). It contributes to social, economic, and ecological sustainability by guiding the restoration or maintenance of the health of the land in the Monument.

This Monument Plan was developed for the selected alternative, Alternative B, as identified in the Giant Sequoia National Monument Final Environmental Impact Statement (FEIS). The FEIS describes the analysis used in formulating the Monument Plan. A Record of Decision is also available that identifies the selected alternative and the rationale used in making the decision.

The Monument Plan provides the strategic direction at the broad program level for managing the Monument and its resources over the next 10 to 15 years. It includes the direction required by the Clinton proclamation (Proclamation), and it replaces, in its entirety, all previous management direction for the Monument, including the direction in the 1988 Sequoia National Forest Land and Resource Management Plan (Forest Plan) for this part of the Sequoia National Forest. It is the single comprehensive management plan for this area. While the Monument Plan is a stand-alone document, it is also a subset of the entire Forest Plan.

This strategic direction was developed by an interdisciplinary planning team working with forest staff, making use of extensive public involvement and collaboration, and the best science available. The Monument Plan implements the Proclamation by providing guidance to protect the objects of interest, restore ecosystems, and provide opportunities for public use. It provides a context for informed

decision making, while guiding resource management programs, practices, uses, and projects. It will guide the development and analysis of resource management activities in future site-specific projects to move resources toward the desired conditions for the Monument.

This plan does not include any decisions on specific projects or activities. Those decisions will be made later, after more detailed analysis of specific project sites and additional public involvement on site-specific proposals. Compliance with the National Environmental Policy Act (NEPA) is required for any project-level decision that may have an effect on the environment. Project-level decisions must be informed by site-specific analysis through an open, public process.

The Monument Plan is adaptive in that new knowledge and information can be analyzed and the plan changed, if appropriate, at any time. It provides overall intent and guidance, but provides the flexibility needed for the responsible official to work with the public and adapt management strategies to the constantly changing demands that are inherent to natural resource management. It defines the parameters (limits) for management but allows for the adjustment of future project-level decisions to accommodate rapidly changing social and resource conditions. This allows the latest science and public input to be employed at the time a decision is to be made.

The Monument Plan was prepared according to the requirements of the National Forest Management Act (NFMA), its implementing regulations at 36 Code of Federal Regulations (CFR) 219 (77 FR 21260, April 9, 2012), the National Environmental Policy Act of 1969 (NEPA), and the Council of Environmental Quality (CEQ) regulations at 40 CFR 1500-1509. NFMA's current implementing regulations at 36 CFR 219.17(b)(3) (77 FR at 21270) allow the use of the provisions of the prior planning regulation, including its transition provisions (2000 Planning Rule at 36 CFR 219.35(a) and (b) [2010], December 18, 2009). The transition provisions of the 2000 planning rule allow the use of the prior planning regulation promulgated in 1982. The Monument

Part 1—Vision

Plan was developed using the process outlined in the 1982 planning regulations, while considering the best available science as required by the 2000 rule transition provisions (36 CFR 219.35(a) (2010)).

Unless otherwise noted, all subsequent citations to “36 CFR 219” in this document refer to the 1982 planning process: see 36 CFR Part 219 (2000).

Organization of the Monument Plan

This Monument Plan consists of four interrelated parts that work together to facilitate the use of adaptive management and the development of management activities that will move the Monument toward the desired conditions. Part 1—Vision paints the picture of the conditions desired in the long term. Part 2—Strategy contains the strategic management direction. Part 3—Design Criteria contains the guidance for designing actions and activities in order to make progress toward the vision and desired conditions described in Part 1. Part 4 contains the Transportation Plan for the Monument.

Part 1 is the Vision for the Monument. It includes the purpose of the Monument Plan, the relationship of the Monument Plan to other documents, and a description of the Monument. Part 1 discusses the Monument niche (the Monument’s uniqueness on a national and regional level) and its recreation niche. Part 1 also describes the desired conditions (36 CFR 219.11(b)⁽¹⁾) for the resources of the Monument.

Part 2 is the Strategy for the Monument. It begins by identifying generally suitable land uses and activities

for the Monument. It then lays out the management strategies and objectives (36 CFR 219.11 (b)⁽²⁾) that the Forest Service will strive to achieve in order to move the Monument toward the desired conditions described in Part 1. Part 2 also identifies special areas in the Monument (36 CFR 219.17⁽³⁾), as well as the land allocations and management areas (36 CFR 219.11(c)⁽⁴⁾) for the Monument.

Part 3 is the Design Criteria for the Monument. The design criteria include the laws and regulations, treatment and clear need criteria, the decision tree, standards and guidelines (36 CFR 219.11(c) and 219.13 through 219.29⁽⁵⁾), and monitoring and evaluation procedures that will be used during site-specific project planning and implementation. Design criteria are sideboards for subsequent projects and activities to help achieve the desired conditions.

Part 4 is the Transportation Plan for the Monument. Required by the Proclamation, it provides a framework by which to manage the transportation system and make future decisions concerning changes to it.

1. These are 1982 regulations that are no longer in the CFR, but are still applicable to this plan amendment.

2. Ibid.

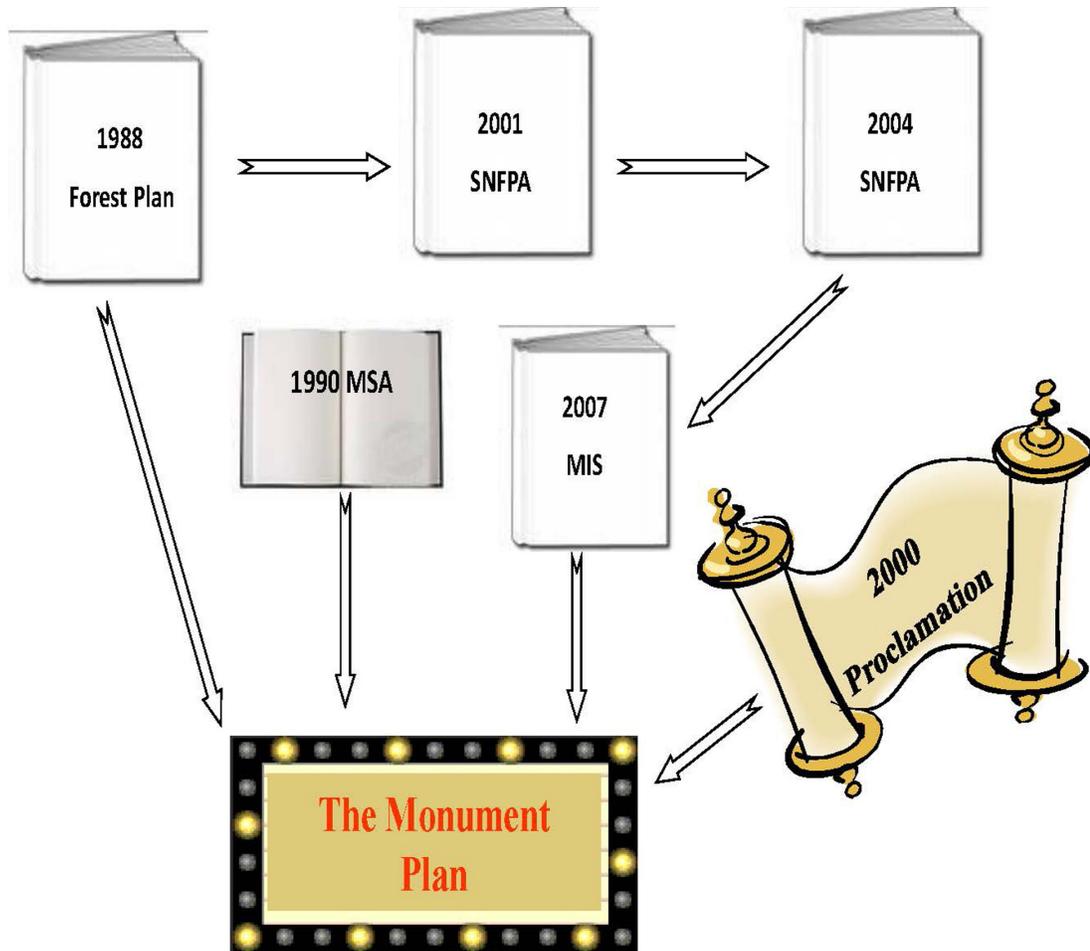
3. Ibid.

4. Ibid.

5. Ibid.

Relationship of the Monument Plan to Other Documents

Figure 1 Management Direction and Guidance for the Monument



The Record of Decision (ROD) for the Monument Plan EIS amends the existing 1988 Forest Plan, as amended by the 1991 Kings River Wild and Scenic River and Special Management Area Implementation Plan (KRSMA), the 2001 Sierra Nevada Forest Plan Amendment (2001 SNFPA), and the 2007 Sierra Nevada Forest Management Indicator Species Amendment (SNF MIS). The Monument Plan was developed using the guidance and management direction provided by the 1990 Mediated Settlement

Agreement (MSA) and is constrained by that which is applicable to the Monument and consistent with the Proclamation. The Monument Plan also considers the 2004 Sierra Nevada Forest Plan Amendment (2004 SNFPA), but is not constrained by its management recommendations. The Monument Plan was guided by the best available science, a thorough review of relevant scientific information, and practical experience, as required by national forest planning direction and the Proclamation.

Monument Description

The Giant Sequoia National Monument (Monument) is located in south-central California and covers 328,315 acres administered by the United States Department of Agriculture (USDA), Forest Service, Sequoia National Forest (see location maps in Appendices A and B). Created by presidential proclamation on April 15, 2000, the “rich and varied landscape of

the Giant Sequoia National Monument holds a diverse array of scientific and historic resources. Magnificent groves of towering giant sequoias, the world’s largest trees, are interspersed within a great belt of coniferous forest, jeweled with mountain meadows. Bold granitic domes, spires, and plunging gorges texture the landscape” (Clinton 2000, p. 24095).

Vision

The Monument is set apart and reserved for the purpose of protecting the objects of interest identified in the Proclamation, for their proper care and management (Clinton 2000). The objects of interest were generally identified in the Proclamation, with the requirement that the Monument Plan provide direction for their proper care. Through public and agency dialogue, the objects of interest have been determined to be a mix of individual objects or locations (such as specific caverns or named sequoias) and broad ecosystems with their natural processes. For the purpose of managing the Monument, the Forest Service has refined the list of objects of interest as follows:

- The naturally-occurring giant sequoia groves and their associated ecosystems, individual giant trees, and other rare and endemic plant species listed as threatened, endangered, or sensitive by the Endangered Species Act or the Forest Service.
- The ecosystems and outstanding landscapes that surround the giant sequoia groves.
- The diverse array of rare animal species, including the Pacific fisher; the great gray owl; the American marten; the northern goshawk; the peregrine falcon; the California spotted owl; the California condor; several rare amphibians; the western

pond turtle; and other species listed as threatened, endangered, or sensitive by the Endangered Species Act or the Forest Service.

- The paleontological resources in meadow sediments and other sources of recorded ecological changes such as fire regimes, volcanism, vegetation, and climate.
- The limestone caverns and other geological features, including granite domes, spires, geothermally produced hot springs and soda springs, and glacial and river-carved gorges.
- Cultural resources, both historic and prehistoric, which provide a record of human adaptation to the landscape and land use patterns that have shaped ecosystems.

The Monument provides for and encourages continued public and recreation access and use consistent with protecting the objects of interest (Clinton 2000). The Monument provides exemplary opportunities for biologists, geologists, paleontologists, archaeologists, and historians to study the objects of interest; for understanding ongoing environmental changes; and for studying forest resilience and the consequences of different approaches to forest restoration (Clinton 2000).

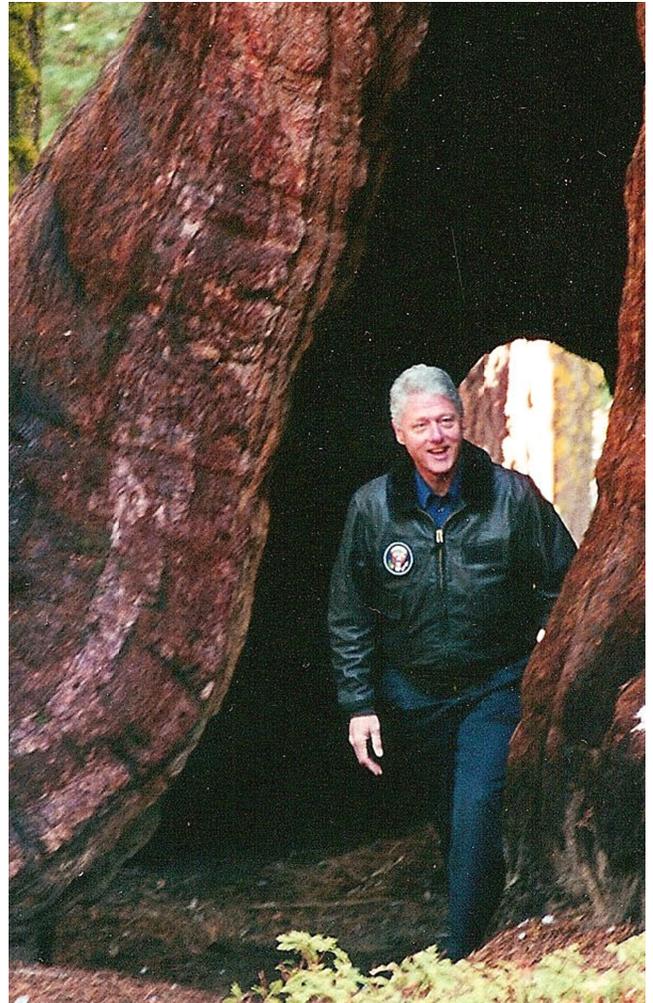
Monument Niche

Giant sequoias (*Sequoiadendron giganteum*) grow only on the western slopes of the Sierra Nevada mountain range in California. These trees can tower 270 feet high and reach 30 feet in diameter. Located at the southernmost end of the Sierra Nevada in central California, the Sequoia National Forest, named for the world's largest trees, contains the greatest concentration of giant sequoia groves in the world. Thirty-three groves and the areas around them are protected within the Giant Sequoia National Monument (Monument) (see the list in Appendix C and the map in Appendix D).

The Monument is unique as it is the only national monument in California that was designated by presidential proclamation. With authority vested in the American Antiquities Act of 1906, in April 2000, President Clinton set aside and reserved the Monument for the purpose of protecting the objects of interest.

The rich and varied landscape of the Giant Sequoia National Monument holds a diverse array of scientific and historic resources. Magnificent groves of towering giant sequoias, the world's largest trees, are interspersed within a great belt of coniferous forest, jeweled with mountain meadows. Bold granitic domes, spires, and plunging gorges texture the landscape. The area's elevation climbs from about 2,500 to 9,700 feet over a distance of only a few miles, capturing an extraordinary number of habitats within a relatively small area. This spectrum of ecosystems is home to a diverse array of plants and animals, many of which are rare or endemic to the southern Sierra Nevada. The monument embraces limestone caverns and holds unique paleontological resources documenting tens of thousands of years of ecosystem change. The monument also has many archaeological sites recording Native American occupation and adaptations to this complex landscape, and historic remnants of early Euroamerican settlement as well as the commercial exploitation of the giant sequoias (Clinton 2000, p. 24095).

The Monument's landscape is as spectacular as its trees. Soaring granite monoliths, glacier-carved canyons, limestone caves, roaring world-class



Picture 1 President Clinton next to the giant sequoia where the Proclamation was signed (April 2000)

whitewater, and scenic lakes and reservoirs await visitors' discovery at the Sierra Nevada's southern reach. The Monument offers visitors spectacular views in a dramatic range of settings. These mountains stand in contrast to California's San Joaquin Valley, providing cool relief for families from the scorching heat of summer and welcome blue skies and sun during the cold fog of winter. From the dramatic Kings Canyon, through the ancient giant sequoias, down to the mighty Kern River, the Monument features diverse settings and special places.

The Monument is well-known for these settings and places. These settings, as well as other outstanding features that are less well-known, are important to

Part 1—Vision

individuals and create strong connections to place, which may come from personal experience or from someone else’s experience. Places have particular meaning for individuals, and each person can have that attachment for a different place or multiple locations, which may vary with the activity, such as a favorite camping spot, or a favorite trail, or a favorite vista point. No one place can satisfy that connection for all people. The place and the reason for the attachment are as individual as the person.

The Giant Sequoia National Monument is a unique place, highly valued by its neighbors, visitors, and distant admirers. Giant sequoias are a symbolic vestige of the wild Sierra, evoking a deep emotional response, even from people who have never experienced their grandeur firsthand.

Over the years, people have named a number of individual giant sequoia trees or stumps. Some of these trees or stumps have multiple names. The reason they were named is often unknown and is the subject of speculation and stories passed down through the generations. These named trees or stumps are still important to people and represent part of the cultural landscape of the Monument. However, current Forest Service policy is to avoid any further naming of giant sequoia trees. The following table lists the known officially named giant sequoia trees and stumps in the Monument. Named giant sequoia have either been identified on the forest recreation map or in officially published documents such as *The Giant Sequoias of California*, published by the United States Government Printing Office in 1942.

Table 1 Named Giant Sequoias

Tree Stump	Grove Name	Ranger District	Remarks
Boole	Converse Basin (includes Cabin Creek Grove)	Hume Lake	Largest giant sequoia on National Forest System lands
Chicago Stump	Converse Basin	Hume Lake	Formerly the General Noble Tree—cut for the 1893 World Fair in Chicago
Bush	Freeman Creek	Western Divide	Named for President George H.W. Bush in 1992

Recreation Niche

The recreation niche is what the Monument has to offer in terms of special places, opportunities, and potential experiences, overlapped with what people desire and expect in terms of outdoor recreation from public lands. The Monument is best known for particular attributes or settings, including giant sequoias and their ecosystems. The following settings can be found within the Monument:

- **Rivers and Lakes:** Water is the magnet, featuring world-class whitewater and attracting family use at Hume Lake and the Kern, Kings, and Tule rivers (high niche conformance⁶).
- **Scenic Routes:** These routes offer great views through a range of life zones, providing access to adventure and discovery (high niche conformance).

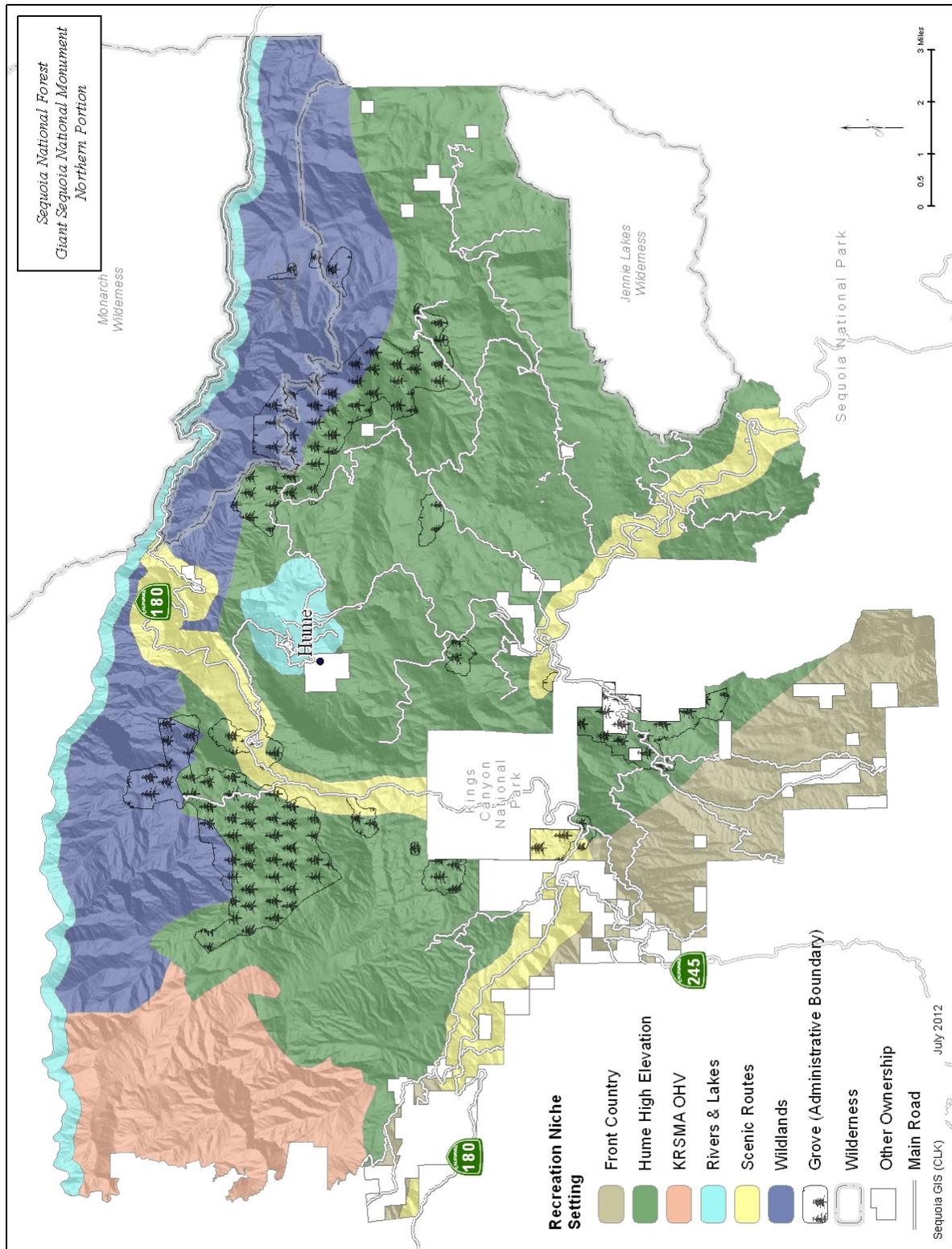
- **Great Western Divide:** Giant sequoias and dispersed recreation (high niche conformance).
- **Lloyd Meadow:** Spectacular Kern Canyon views; rock climbing on granite formations; dispersed recreation; giant sequoias (high niche conformance).
- **Hume High Elevation:** Overnight destination with giant sequoia logging history; wilderness access; intertwined with national parks (high niche conformance).
- **Wildlands:** Includes parts of two wildernesses in the Monument and a few other areas, offering solitude and scenic backdrop (moderate niche conformance).
- **Front Country:** Year-round access; desirable in spring (wildflowers) and fall (hunting); very hot in summer; chaparral, oak to mixed conifer (low niche conformance).
- **Kings River Special Management Area OHV:** Off-highway vehicle (OHV) use in the

6. How well those settings fit with what the forest is known for is called niche conformance. However, just because a setting is noted as having low or moderate niche conformance does not mean that those settings are not important to individuals; their own connection to place may be strongest for some of those locations.

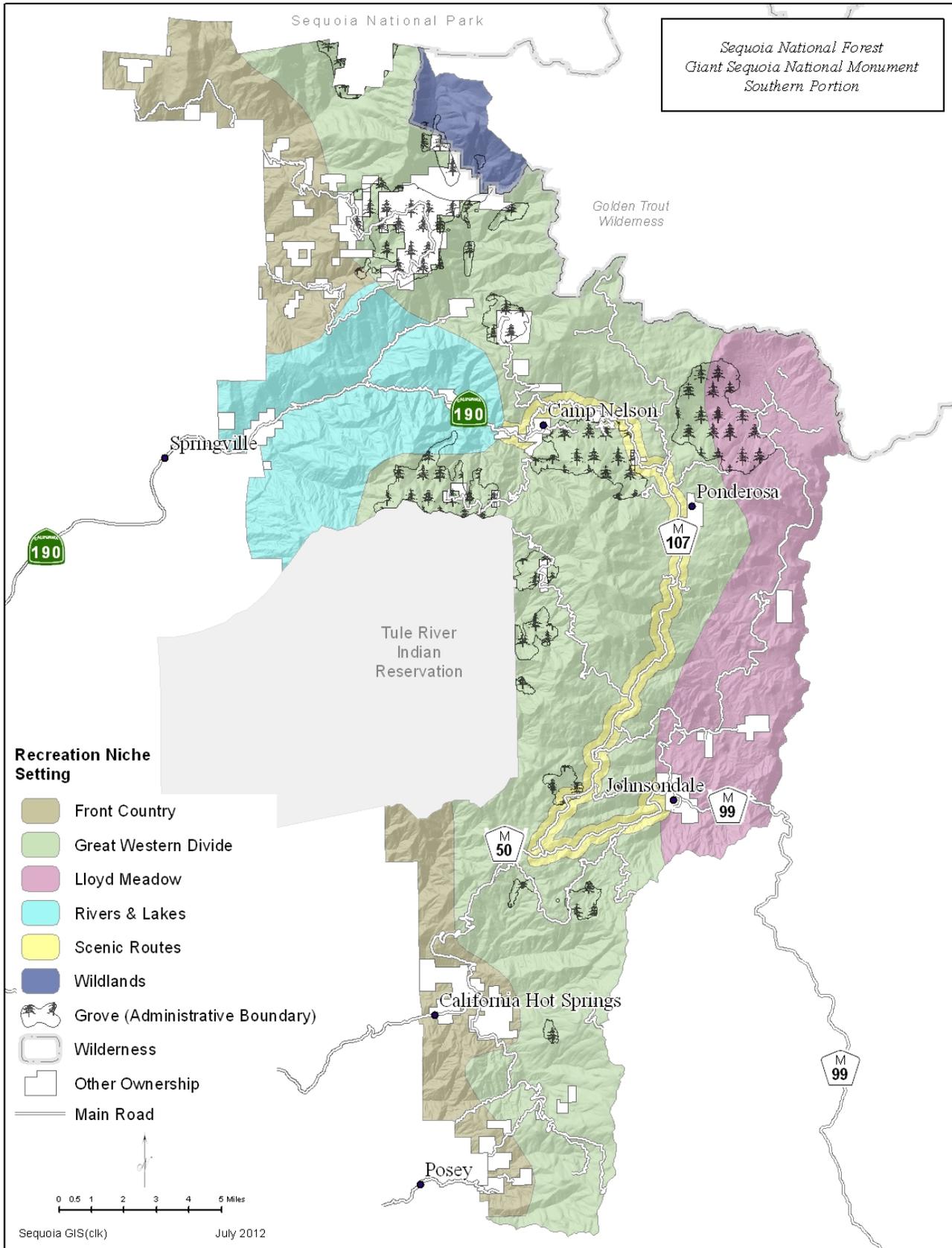
Monument, authorized by law; this steep canyon offers motorized trails with solitude (low niche conformance).

Maps 1 and 2 display the recreation niche settings established for the Monument.

Map 1 Recreation Niche Settings for the Northern Portion of the Monument



Map 2 Recreation Niche Settings for the Southern Portion of the Monument



The recreation niche settings, as delineated for the entire Sequoia National Forest, are further divided into places and are described in the following paragraphs.

Rivers and Lakes



Picture 2 Kings River

Kings River

The Kings River forms the boundary between the Sierra National Forest and the Sequoia National Forest. Portions of the river in both forests are designated as wild and scenic. The Kings River Special Management Area (KRSMA), a congressionally designated area, also lies in both forests, but is administered by the Sierra. The river formed the world-renowned Kings Canyon, which is more than 8,000 feet deep, located in both the national forest and the adjacent Kings Canyon National Park. Both the Middle and South Forks begin in Kings Canyon National Park and flow down through portions of the Monarch Wilderness in the national forests.

Highway 180, which is the Kings Canyon Scenic Byway, drops into the Kings River Gorge along the South Fork and provides the only vehicle access to

the Cedar Grove portion of Kings Canyon National Park. This highway provides access for sightseeing tourists along the South Fork of the Kings River, to Cedar Grove, and to the wilderness trailheads. This is a prime fly fishing area.

The junction of the South and Middle Forks is also the eastern boundary of the KRSMA, which extends west along the main stem of the Kings River to Mill Flat Campground, and includes the surrounding lands up to the main ridges of the Kings River Gorge. This section of the river has steep terrain and very limited access, so this part of the KRSMA has little visitation. It is visited mostly by anglers accessing the river on the Yucca Point or Mill Flat Creek Trails (Forest Trails 28E01 and 27E01).

From Mill Flat Campground west to Pine Flat Reservoir, Mountain Road 2 and Road 12S01 provide vehicle access to the river. Portions of the Kings River are famous for whitewater rafting and fly fishing.

The main stem of the Kings River (west of KRSMA) is popular with activity-oriented adventure seekers such as whitewater rafters (managed by the Sierra National Forest), anglers, water players (couples and families), and social gatherers.

Hume Lake

This area includes the Hume Lake Campground, multiple day use sites, a group camp, and a recreation residence tract. The lake was once a mill pond created



Picture 3 Hume Lake

Part 1—Vision

by the Hume Bennett Lumber Company during the historic logging period. Now the lake draws huge crowds during the summer months. The campground is often full. People staying overnight in other areas often use the facilities here during the day. At about 5,200 feet in elevation, the reservoir is located in mixed conifer forest within the Monument. The Hume Lake Dam, designed by John Eastwood in 1908, is the first concrete-reinforced multiple arch dam to be constructed in the United States. The dam is being considered for nomination as a national historic landmark. An interpretive trail was developed around the lake, part of which is accessible for persons with disabilities. The Hume Lake Christian Conference, which is highly developed and nationally known, is located on private land at one end of the lake and is open year-round.

Forest experience seekers, anglers, water players, and social gatherers use the area. Sightseeing tourists overflow from the national parks and the Hume Lake Christian Conference. Because of these influences, visitors tend to be family-oriented and very interested in learning. Overnight camping, non-motorized boating, picnicking, fishing, water play, and hiking are popular activities.

Tule River

Originating in high-elevation alpine meadows, the three branches of the Tule River flow through the Monument. Steep canyons escort the three forks as they drop in elevation and meet in Lake Success reservoir. The rural community of Springville, at 1,000 feet elevation, is developing quickly and serves as a gateway to the Monument. The Tule River Indian Reservation, the second largest in California, surrounds the South Fork of the Tule River. Special management challenges include fire, hydroelectric power projects, urban interface, crowd and traffic control, litter, graffiti, and gang-related problems.

The Tule River corridor is a year-round refuge for recreation, providing relaxation for neighbors (communities of Porterville, Springville, Pierpoint Springs, Camp Nelson, Sequoia Crest, Ponderosa), anglers and hunters, social gatherers, water players



Picture 4 Tule River

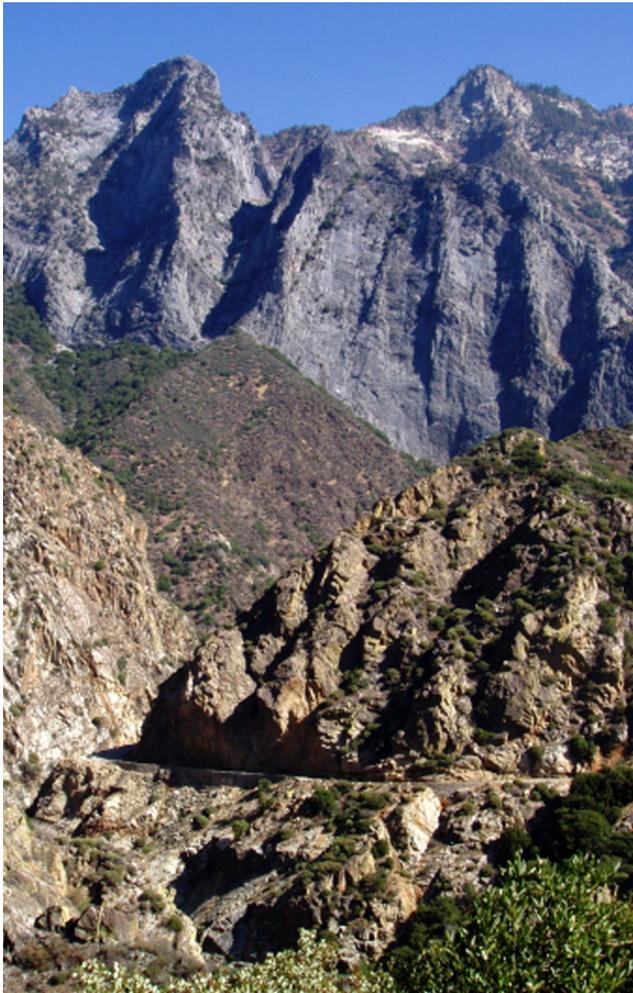
(residents of the central valley), and sightseeing tourists. Proximity and easy access allow lower income groups to frequently use the river corridor. Youth, Hispanic, and Asian visitors are numerous. The rapidly developing community of Springville is attracting retirees and families from the urban areas of California, many of whom have little experience with the urban/wildland issues of a foothill community.

Scenic Routes

Kings Canyon Scenic Byway

This scenic route transects a number of recreation settings: Front Country, Hume High Elevation, and Rivers and Lakes. The Kings Canyon Scenic Byway is the only designated national forest scenic byway in the Sequoia National Forest, and it provides the only vehicle access into the world-renowned Kings Canyon. This area of the forest is strongly influenced by visitors to the Sequoia and Kings Canyon National Parks. Grant Grove, the Kings River, the Monarch Wilderness, Grizzly Falls, and Boyden Cavern are popular attractions along the route. Elevations range from 2,000 to 8,000 feet.

Sightseeing tourists (accessing the national parks) and forest experience seekers (central valley residents



Picture 5 Kings Canyon Scenic Byway

escaping the summer heat) use the route to reach favorite recreation destinations. Some wilderness users travel this route to reach backcountry and wilderness. Environmental students and geology enthusiasts are drawn to the rare folded rock formations along the highway and other outstanding geological characteristics.

Generals Highway

This route travels through National Forest System lands connecting Sequoia National Park with Kings Canyon National Park. The road is high elevation that is closed periodically during the winter when snow makes travel questionable for passenger vehicles. Routes that go to Jennie Lakes Wilderness, Buck Rock, the Big Meadows area, and Ten Mile Road are accessed from this highway. Management challenges include risks associated with wildfire, urban/private property, and Sequoia and Kings Canyon National Parks interface. Visitation rates and visitor expectations for scenery are high because of the adjacent national parks.

Western Divide Highway

Steep mountains with granite outcrops rising from 4,500 feet to 10,000 feet in elevation, mixed conifer forests with multiple giant sequoia groves, and mountain meadows characterize this area. This setting shares a boundary with the Tule River Indian Reservation. Several small residential communities, recreation rental cabins, recreation residences, and the popular Trail of 100 Giants are in this setting. Special management challenges include giant sequoia health, fisher habitat, off-highway vehicle (OHV) and over-snow vehicle (OSV) use, public use and the need for patrols, wildland urban intermix, and proximity to Mountain Home State Forest.

Visitors include sightseeing tourists, including international visitors from European and Asian countries, forest experience seekers and their families escaping the heat of summer, and individuals from all market zones. Hispanic and Southeast Asian visitation is increasing. Hunters, anglers, and traditional users frequent developed and dispersed camping sites. Activity-oriented adventure seekers are attracted to



Picture 6 View of Needles from Dome Rock

outstanding rock climbing opportunities, stock use, hiking, mountain biking, cross-country skiing, and OHV and OSV use.

Great Western Divide

The Great Western Divide is the high elevation ridge line that breaks the Sierra Nevada range into two watersheds. This area has 19 recorded giant sequoia groves. Old growth forests provide habitat for rare wildlife species such as the Pacific fisher. Meadows, some lined with aspen groves, creeks with waterfalls, and distant vistas are abundant. Needles and Dome Rock are spectacular, high profile granite monoliths. Slate Mountain is an unusual and prominent landmark with a botanical area hosting rare plants. Jordan and Mule Peak are still in operation as fire lookouts, and they are open to the public. Scenic attributes cover a wide variety of habitats including old growth forests with rare wildlife species, giant sequoia groves, meadows, aspen groves, creeks with waterfalls, views to distinctive ridge lines at Slate Mountain, Jordan Peak, Mule Peak; and geological features of Needles and Dome Rock.

Lloyd Meadow

This high mountain shelf, in the Monument between the Western Divide and the Kern Plateau, has an average elevation of 5,500 feet. The southern third of this meadow was burned in the McNally Fire of 2002. Granite formations and expansive vistas of the Kern River and Kern Plateau are enjoyed from many areas. Special management challenges include lost visitors, visitor safety, patrolling, and litter.

Activity-oriented adventure seekers (rock climbers, equestrians), social gatherers, forest experience seekers, traditional users, hunters, anglers, and wilderness users (accessing trailheads or coming from organizational camps) are primary users.



Picture 7 View from Lloyd Meadow Road

This area is a generational destination and family use area. Native American, international, and out-of-state use is increasing. Organizational camps contribute a youth component in the summer. Popular activities are dispersed camping, water play at the “tubs and slides,” equestrian use, developed camping, group use (non-commercial), rafting and kayaking the Forks of the Kern, hunting, fishing, rock climbing, hiking, mountain biking, and viewing the George Bush Tree. Outfitter guides provide services for some of these activities. This area contains the only access point for boaters starting the Forks of the Kern run and provides early season access to wilderness.

Hume High Elevation

Located in the northern portion of the Monument in the Hume Lake Ranger District, this area is strongly influenced by the national parks and the Hume Lake Christian Camps. Elevations range from 4,000 to 8,000 feet in mixed conifer forest, with one of the largest concentrations of giant sequoia groves. Visitors have many opportunities to discover and explore these groves in their natural, wild condition, while enjoying outstanding scenery, including Buck Rock and vistas of the Sierra high country and into Kings Canyon. Special management challenges include coordination of the fee program with the National Park Service.

Year-round use is by sightseeing tourists (many are out-of-state and international), traditional users with long-standing family traditions, forest experience seekers (mostly central valley residents, with nontraditional user groups of Hispanic and Hmong), some activity-oriented adventure seekers (equestrian camp), wilderness users, and environmental students and enthusiasts visiting the sequoia groves. Popular activities include camping in developed sites, day use, social gatherings, dispersed camping,

hiking, equestrian camping, hunting, fishing, rock climbing, and OHV and OSV use (designated roads only). This area provides wilderness access, two resorts, a recreation rental cabin, a pack station, and organizational camps.

Wildlands

Wildlands include designated wilderness and a few other areas with limited access. The following places are in the Monument: parts of the Golden Trout Wilderness and the Monarch Wilderness, the Agnew Roadless Area, and part of the KRSMA (non-OHV portion).

This setting offers the best opportunities for solitude and those recreation experiences centered on self-reliance. No developed facilities and very, very steep slopes characterize these lands. Many areas have significant geological formations. Historic cabins and trails, and a wide range of settings and physical challenges, draw visitors who desire experiences in these remote locations; wilderness attracts a relatively small number of visitors to the Monument. Special management challenges include shared



Picture 8 Hume High Elevation

management and needed coordination for some of these areas, managed wildfire, grazing, private inholdings, administrative facilities, trail maintenance, group use management, feral pigs, threatened and endangered species, OHV trespass and encroachment, permits, marijuana cultivation, and archaeological site protection. The Monarch Wilderness is shared with the Sierra National Forest, the Golden Trout is shared with the Inyo National Forest, and KRSMA is administered by the Sierra National Forest.

Wilderness visitors are generally tough, adventurous types, and use is predominantly in the summer months. Outfitters and guides operate in these areas, bringing in anglers, hunters, and sightseers.



Picture 9 Golden Trout Wilderness

Golden Trout Wilderness

Designated in 1978, totaling 303,511 acres, the Inyo manages the eastern two-thirds, and the western third is managed by the Sequoia. Only a small section in the northwest corner of the Golden Trout Wilderness and adjacent to Mountain Home State Forest is in the Monument. Maggie Mountain and Moses Mountain are outstanding landmarks, along with the North Fork of the Middle Fork of the Tule River and the Maggie Mountain, Middle Tule, and Upper Tule River giant sequoia groves.

Kings River Special Management Area (KRSMA)

The portion of KRSMA in the Wildlands setting begins at the junction of the South and Middle Forks of the Kings River where highway 180 climbs out of the canyon. This part of KRSMA has little visitation because of the steep terrain. This area is visited mostly by anglers accessing the river. The Boole Tree is located on the southern boundary of this area and can be accessed by a two-mile loop trail. Plant communities range from riparian along the Kings River, forming the northern boundary, through grassland and chaparral to giant sequoia groves at the top of the drainage of Converse Creek. Prehistoric and historic use by Native Americans and ranchers occurred in this area.

Monarch Wilderness and Agnew Roadless Area

The Monarch Wilderness was designated in 1984, totaling 44,896 acres. The Sierra National Forest manages the northwest portion, and the rest is managed by the Sequoia. The wilderness is adjacent to Kings Canyon National Park. From 2,000 feet in elevation at the South Fork of the Kings River to 11,077 feet on Hogback Peak, this land is steep and rugged with magnificent views from high ridges into deep canyons. Riparian areas to brush lands to conifer forests to meadows to giant sequoia groves, the Wild and Scenic South Fork of the Kings River and highway 180 bisect the area. The Kanawyer Trail traverses the Monarch and provides magnificent views into Kings Canyon. The Deer Cove Trail leads up to Grizzly Lakes and Wildman Meadow, popular only with the hardiest of hikers, hunters, and stock users. At the higher elevations are the Monarch, Deer Meadow, Agnew, and part of Evans giant sequoia groves. Agnew Roadless Area, like the adjacent Monarch Wilderness, is generally steep terrain, broken by rock outcrops and streams with mixed conifer forest. The Windy Gulch Geological Area (caves) is located in this area.

Front Country

This setting is a desirable destination for visitors in spring and fall, when temperatures are moderate and snow prevents access to higher elevations, and less desirable in the heat of summer. During the spring, the hillsides are dressed in spectacular displays of wildflowers. Often referred to as the foothills, the landscape progresses uphill from grasslands, chaparral, and oak woodland to mixed conifer forest. Elevations range from 1,000 to 4,500 feet, with decomposed granite and erosive soils. These areas are subject to fire, by nature, and the wildland urban intermix increases that risk. Special management challenges include the control of marijuana cultivation, OHV trespass, tribal relations, lack of Forest Service presence in the field, grazing, wildland urban intermix, and fire control.

Activity-oriented adventure seekers include equestrians during the cool months, hang gliders, hunters, hikers, OHV users, and dog trainers. A diverse group, most are day using neighbors. Spring wildflower displays attract visitors driving for pleasure.



Picture 10 Spring wildflowers in the Front Country

Kings River Special Management Area (KRSMA) OHV

This area is bounded on the north by the Kings River and has the only two OHV trails in the Monument, as authorized by the legislation that created the KRSMA. This area is generally steep, with brush- and grass-covered canyons, is not very accessible, and provides great opportunities for solitude. Native American use and needs may preclude some types of interpretive efforts. Millwood staging area and Mill Flat Campground are the access points to this area, via the Davis Road (12S01). Visitors consist of OHV users and local hunters. Special management challenges include shared management and needed coordination for the KRSMA, which is administered by the Sierra National Forest.



Picture 11 Kings River Special Management Area

Desired Conditions

The desired conditions stated below are essentially the long-term goals for resources in the Monument. They describe the desired future state of resources in the Monument. Desired conditions may be achievable only over a long period of time. They are based upon:

1. The Proclamation (Clinton 2000)
2. Advisories from the Scientific Advisory Board and information presented at the Southern Sierra Science Symposium
3. Current management direction
4. Public comments on the interpretation of the Proclamation and the proposed action

The desired conditions are presented by the resource areas affected by this plan amendment.

Scientific Study and Adaptive Management

Resource management decisions are based on sound science. Research projects focus on science relevant to the proper care and management of the objects to be protected. This includes continuous, iterative collaboration between scientists and managers in the implementation of research projects.



Picture 12 An hydrological assessment

Vegetation, including Giant Sequoias

Forested stands in the Mediterranean climate of the Monument are subject to frequent weather cycles. Years of cooler, wetter weather are often followed by years of hotter, drier weather. The desired condition of

a forested stand subject to these extremes is diversity in composition (species, size, age class, distribution) and spatial distribution that are expected to be more resilient to climate changes over time.

Mixed Conifer Forest

The mixed conifer forest varies by both species composition and structure—as influenced by elevation, site productivity, and related environmental factors, including disturbance—and is in a condition that is resilient to changes in climate and other



Picture 13 Bearskin Grove

ecological conditions. The composition is patchy, consisting of a variable mixture of conifer and hardwood trees, as well as a diverse mixture of shrubs, herbaceous vegetation, and grasses. Spatial arrangements vary from pure, or nearly pure, groupings to complex combinations, often within relatively limited areas. Low density forests with frequent canopy openings, varying in size, dominate much of the landscape, with higher density forests on portions of north and east aspects.

More frequent openings with early seral structure and composition (10 percent of the vegetation type) exist within the giant sequoia groves. Some mid-seral structure has converted to a later seral stage as tree sizes increase. Approximately 70 percent of the mixed conifer within groves is dominated by trees greater than 24 inches in diameter. Some of the large trees have multi-layered crowns, producing 60 percent or more canopy cover.

Outside giant sequoia groves, 10 percent of this vegetation type is early seral structure and composition. Almost half of the mid-seral structure has converted to a later seral stage as tree sizes increase. Approximately 50 percent of the mixed conifer is dominated by trees greater than 24 inches in diameter. Some of the large trees have multi-layered crowns, producing 60 percent or more canopy cover.

Blue Oak–Interior Live Oak⁽⁷⁾

Blue oak conditions are maintained at their current condition: a fire regime of low intensity fires, with flame lengths less than three feet; natural vegetation types; and a highly variable and complex landscape pattern. Blue oak dominates, with grass and occasional shrubs as the understory. There are occasional or periodic flushes of regeneration to replace mortality in older trees.

Chaparral–Live Oak⁽⁸⁾

Interior and canyon live oak vegetation is a mosaic of varying size and age classes. Large expanses of dense or older chaparral are broken up by recent disturbances of 10 acres or more, to help slow the spread of fire and regenerate chaparral species. Fire susceptibility and severity are low, and fire hazards to adjacent human communities and surrounding forest types are reduced.

7. Foothill woodlands.

Montane Hardwood–Conifer

The montane hardwood/mixed conifer forests vary by both species composition and structure--as influenced by elevation, site productivity, and related environmental factors, including disturbance--and are in balance with climate and other ecological conditions. The composition is patchy, with an abundance of large black oaks. More frequent openings with early seral structure and composition (10 percent of the vegetation type) exist within the groves. Most mid-seral structure has converted to a later seral stage as tree sizes increase.

Approximately 70 percent of the montane hardwood-conifers within giant sequoia groves is dominated by trees greater than 24 inches in diameter. Some of the large trees have multi-layered crowns, producing 60 percent or more canopy cover.

Outside of giant sequoia groves, 20 percent of this vegetation type is early seral structure and composition. Over one-half of the mid-seral structure has converted to later seral as tree sizes increase. Approximately 40 percent of the mixed conifer is dominated by trees greater than 24 inches in diameter. Some of the large trees have multi-layered crowns, producing 60 percent or more canopy cover.

Red Fir

Red fir consists of a mosaic of varying size and age classes, with structural clumping greater than 10 acres, as necessary for species dependent on this vegetation type.

More frequent openings with early seral structure and composition (10 percent of the vegetation type) exist within the giant sequoia groves. Some mid-seral structure has converted to later seral as tree sizes increase. Approximately 70 percent of the red fir within groves is dominated by trees greater than 24 inches in diameter. Some of the large trees have multi-layered crowns, producing 60 percent or more canopy cover.

Outside of giant sequoia groves, 10 percent of this vegetation type is early seral structure and composition. Most mid-seral structure has converted to a later seral stage as tree sizes increase. Approximately 70 percent of the mixed conifer

8. Interior and canyon live oaks.

outside groves is dominated by trees greater than 24 inches in diameter. Some of the large trees have multi-layered crowns, producing 60 percent or more canopy cover.

Fire and Fuels

Fire occurs in its characteristic pattern and resumes its ecological role. Frequent fire maintains lower, manageable levels of flammable materials in most areas, especially in the surface and understory layers. There is a vegetation mosaic of age classes, tree sizes, and species composition, and a low risk for uncharacteristic large, catastrophic fires. The objects of interest are protected; sustainable environmental, social, and economic benefits (such as those associated with tourism) are maintained; and the carbon sequestered in large trees is stabilized.

Fire susceptibility and severity, and fire hazards to adjacent human communities and surrounding forest types, are low. The need to maintain fuel conditions that support fires characteristic of complex ecosystems is emphasized and allows for a natural range of fire effects in the Monument.



Picture 14 Fuel reduction by a giant sequoia

Air Quality

Emissions generated by the Monument are limited and managed, and clean air is provided for the Monument and surrounding communities.

Wildlife and Plant Habitat

Lands in the Monument continue to provide a diverse range of habitats that support viable populations of associated vertebrate species, with special emphasis on riparian areas, montane meadows, and late successional forest. Proper hydrologic and ecological functioning conditions in riparian areas and meadows are restored and maintained. Old forest habitat is in suitable quality, quantity, and distribution to support viable populations of late successional dependent species, including Pacific fishers, American martens, California spotted owls, northern goshawks, and great gray owls. The configuration of habitat in the Monument provides connectivity and heterogeneity.



Picture 15 California spotted owl fledglings

Ecological conditions contribute to the recovery of federally threatened and endangered species such as the California condor and Springville clarkia, and help avoid federal listing of Forest Service sensitive species.

Hydrological Resources

Aquatic, riparian, and meadow ecosystems are protected and restored and provide for the viability of species associated with these ecosystems. Hydrological resources, including rivers, streams, meadows, seasonally or perennially wet areas, and their associated riparian vegetation, are able to adjust and recover from natural and human-caused events.



Picture 16 Big Meadows

Riparian and wetland areas are dynamic systems that change in response to climatic events including climate change. Riparian areas are in dynamic equilibrium with respect to erosion and deposition, sediment supply, discharge, pattern, profile, and dimension. Riparian and wetland areas function hydrologically according to their riparian ecotype: naturally-stable, stable-sensitive, unstable-sensitive-degraded, and naturally-unstable.⁽⁹⁾

Range

Livestock grazing opportunities are maintained and managed for sustainable, healthy rangelands that contribute to local economies and improve watershed conditions.

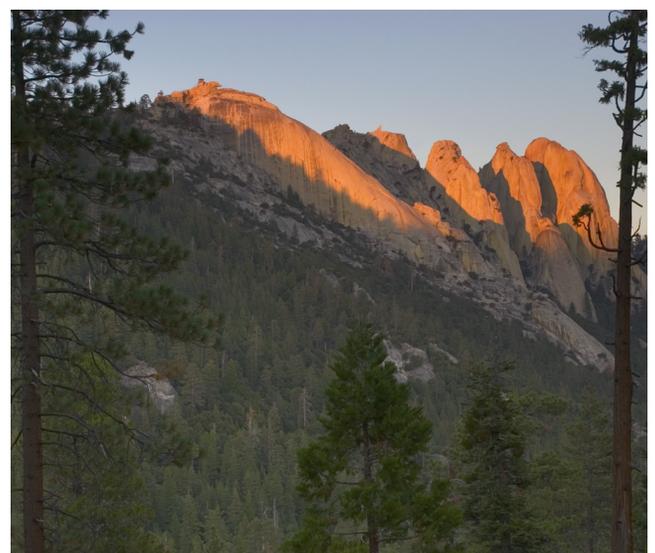
Groundwater

Groundwater quality and quantity in aquifers across watersheds are sustained.

9. Definitions and more in-depth discussion of riparian ecotypes can be found in Chapter 4 of the FEIS (FEIS, Volume 1, Chapter 4, Effects on Hydrological Resources, Assumptions and Methodology, Ecological Restoration).

Geological Resources

Geological features, including caves, domes and spires, soda springs, and hot springs, are protected while providing for public use and enjoyment of these resources.



Picture 17 The Needles, a well-known dome and spire feature popular with rock climbers

Paleontological Resources

Paleontological resources retain the components providing the fossil record.



Picture 18 Flowstone and drapery inside Boyden Cave

Soils

Productive soil conditions are maintained to promote ecosystem health, diversity, and productivity.

Human Use

The Monument provides wide and varied public use of Monument resources and opportunities while protecting sensitive resources and the objects of interest. Recreation use throughout the year is promoted. Visitors find a rich and varied range of sustainable recreational, educational, and social opportunities enhanced by giant sequoias and the

surrounding ecosystems. Consistent and easy-to-read signs and informational materials are provided. Interpretation and conservation education reflect scientifically supported scholarship and research data, conveying clear messages about natural and cultural resources and multiple use. Partnerships are established, providing people with a connection to place and promoting a sense of stewardship. The Monument provides a wide variety of visually appealing landscapes, such as oak woodland, chaparral, a variety of mixed conifer forest, and giant sequoia groves, for the public to enjoy within the places they prefer to visit.



Picture 19 Wide and varied public use

Cultural Resources

A comprehensive cultural resource management program places a greater management emphasis on the rich cultural resources within the Monument as described in the Proclamation. Cultural resources are identified and allocated to appropriate management categories (FSM 2363) (e.g., preservation,

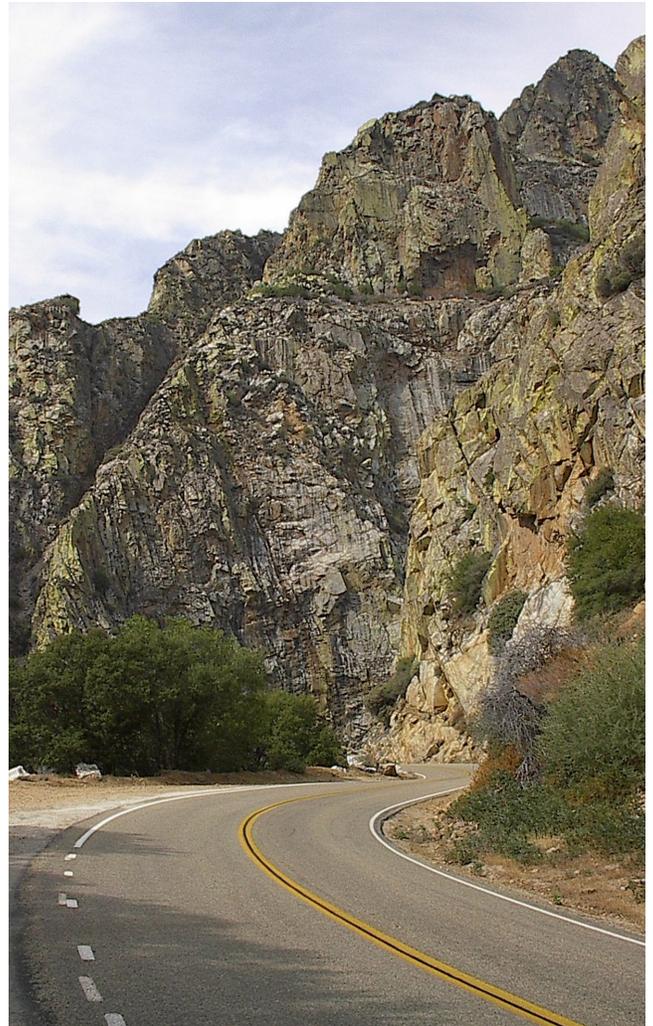
enhancement, scientific investigation, interpretation, release) and are protected, maintained, studied, and used by the public.



Picture 20 Cultural resource site

Transportation System

Roads are safe and fully-maintained to minimize adverse resource effects, while providing public and administrative access to National Forest System lands and facilities within the Monument. The road system is properly sized to provide needed access to the objects of interest for their proper care, protection, and management, as well as visitor enjoyment of the Monument. Roads that are no longer needed have been decommissioned to restore natural drainage and vegetation or converted to other uses.



Picture 21 Kings Canyon Scenic Byway

Part 2—Strategy

Land Allocations and Management Areas

Land allocations are land areas that are differentiated and named in the 2001 SNFPA or in this Monument Plan and its EIS.

Management areas are not land allocations as defined by the 2001 SNFPA, but rather are areas specific to the Monument with their own distinct management direction. The land allocations and management areas for the Monument are shown in their entirety on Map A of the Monument Plan map packet.

There are three categories of land allocations/management areas for the Monument: static, overlapping, and dynamic.

- **Static** land allocations/management areas are those not likely to change in size and location over time. They include designated wildernesses, wild and scenic river corridors, the Kings River Special Management Area (KRSMA), backcountry (inventoried roadless areas), the giant sequoia groves, old forest emphasis area, the Southern Sierra Fisher Conservation Area, research natural areas, botanical areas, and a geological area.
- **Overlapping** land allocations/management areas are those that are likely to overlap with static and dynamic areas. Where they overlap, the more restrictive standards and guidelines

would be applied, except where noted in the Dominant Management Direction table (Table 3). For example, when a wildland urban intermix (WUI) defense zone overlaps designated wilderness, the management direction for the more restrictive land allocation/management area--in this case, the direction for the wilderness area because of the importance of its legal status--is followed.

- **Dynamic** land allocations/management areas are those that are most likely to change in size and location over time with the introduction of new information. For example, as Pacific fisher populations are tracked, new den sites may be identified and mapped. Dynamic land allocations/management areas may, at times, overlap the other types. Since most of the dynamic land allocations/management areas are related to the protection of wildlife species, the standards and guidelines associated with them are usually given priority over most land allocations/management areas they overlap.

The following table shows the acres of land allocations and management areas in the Monument.

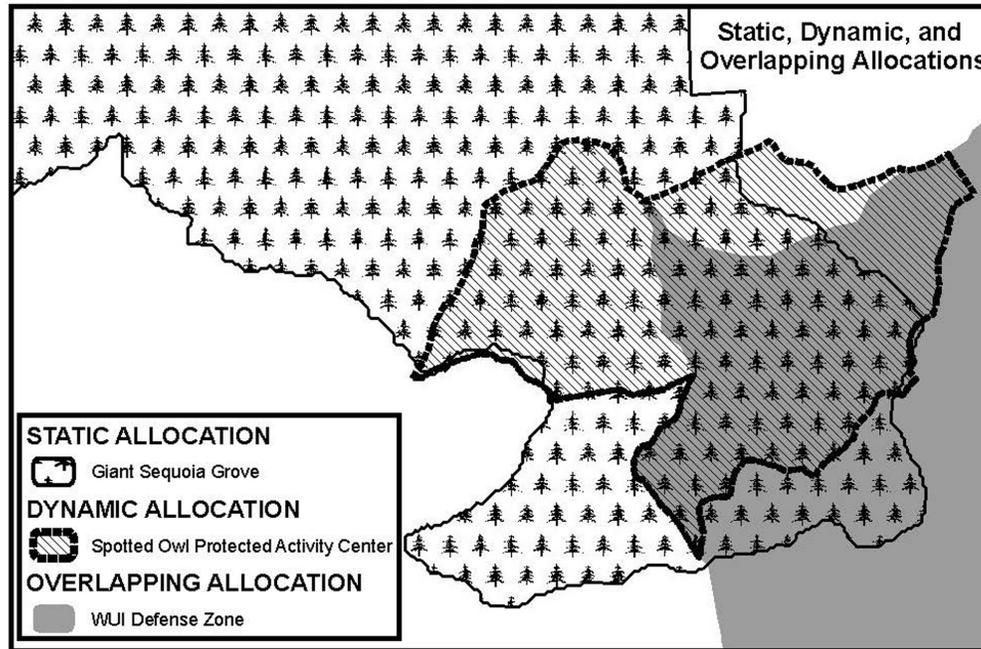
Table 2 Acres of Land Allocations/Management Areas

Land Allocations/Management Areas (Only the Portions in the Monument)	Acres
Static	
Giant Sequoia Groves ⁽¹⁾	90,360
Wilderness/Wild & Scenic Rivers	17,960
Kings River Special Management Area (KRSMA)	24,290
Backcountry (Inventoried Roadless Areas)	80,300
Old Forest Emphasis Area	153,760
Southern Sierra Fisher Conservation Area (SSFCA)	311,150
General Monument	5,710
Research Natural Areas, Botanical Areas, Geological Areas	9,340
Overlapping	
WUI Defense Zone	45,340
WUI Threat zone	145,520
Tribal Fuels Emphasis Treatment Area (TFETA)	56,640

1. Using the Grove Zones of Influence as the grove allocation boundary.

Land Allocations/Management Areas (Only the Portions in the Monument)	Acres
Dynamic	
RCA and CARs	178,000
CA Spotted Owl Protected Activity Centers (PACs)	22,620
Goshawk PACs	3,240
Great Gray Owl PACs	60
Furbearer (Pacific fisher and American marten) Den Sites	3,070
CA Spotted Owl Home Range Core Areas (HRCAs)	44,410

An example of how the three categories of land allocations relate to each other is shown in the following graphic.



The following table further illustrates what management direction would be followed where land allocations or management areas overlap. Where there is an overlap, the table indicates which area's direction applies. Except where noted in the following table, land allocations with standards and guidelines that protect special habitats or protected species have a higher priority than land allocations or management areas that allow more active management. For example, standards and guidelines for California spotted owl protected activity centers (PACs) protect owl habitat and breeding by limiting

the types and intensities of fuel treatments within y glt boundaries. Therefore, where PACs overlap old hqt guv emphasis areas, the standards and guidelines'hqt'y j g'RCEU take precedence over those for old forest go r j cuku'ctgcu"kp

which uqo g'o gej cplecrlhwgn treatments are permitted). Ucpf ctf u and guidelines hqt'f guki pcvgf'y kf gt/ness cpf'dceneqwpv{ "kpxgpvtkgf roadless areas) uwr gtugf g'cm'y qug'hqt other land allocations.

Y j gtg'yj g'ucpf ctf u'cpf 'i wkf grkpgu'hqt y j g'y q'qxgtncr r kpi 'cmqecvkpu'ctg gs wcm{ 't gut le vxg. 'qt'wug'f khhgt gpv o gcuwtgu.'uq'yj cv'dqj 'ugvu'uj qwr' dg'wugf kp'yj g'qxgtncr r kpi 'ctgc.'y j g'cdrg'kpf kecvgu \$cr r n' 'dqj \$'Hqt'gzco r rg.'ucpf ctf u'cpf i wkf grkpgu'hqt 'TECu'cpf 'ECTu'o kpo k g f kwwtdcpeg'qh'i tqwpf 'eqxgt'cpf 'tkr ctkcp xgi gcvkqp.'y j kg'yj qug'hqt'y j g'UUHEC uwr r qt'v'kuj gt'j cdkcv'tgs wktgo gpvu'uwej "cu qxgtuvt { 'tgguc'pf 'ecpqr { 'eqxgt0Vj gtg/

hqtg.'y j gtg'yj gug'cmqecvkpu'qxgtncr. 'dqj 'ugvu'qh'ucpf ctf u'cpf i wkf grkpgu'ecp'cpf'uj qwr' dg'cr r rkgf 'kp'yj g'qxgtncr r kpi 'ctgc.'cu uj qy p'kp'Vcdrg'50 "

Vj g'O qpwo gpv'Rncp'o cr 'r cengv'eqpvkpu'hqt'o cr u'f kur rc { kpi 'rcpf cmqecvkpu'cpf 'o cpci go gpv'ctgcu0O cr 'C'f kur rc { u'yj g'ucvke'rcpf cmqecvkpu'o cpci go gpv'ctgcu'hqt'y j g'O qpwo gpv=O cr 'D'uj qy u'yj g rcpf "cmqecvkpu'o cpci go gpv'ctgcu'hqt'y kf rkg=O cr 'E'f kur rc { u'the WUI zones; and Map D shows the giant sequoia'groves. Recreation and scenery management areas are'delineated on maps to support broad administrative'management, but do not constitute land allocations. Gzco r rgu'qh'yj ku'v'f r g'qh'o cr r gf 'kphqto cvkqp'ctg'O cr u 1 and 2, which display the recreation niche'settings for the Monument, the recreation opportunity'spectrum maps in Appendix F, and the scenic integrity'objective maps in"Appendix G.

Land Allocations/ Management Areas	Southern Sierra Fisher Conservation Area (SSFCA)	Old Forest Emphasis Area	Wildland Urban Intermix (WUI): Defense Zone	Wildland Urban Intermix (WUI): Threat Zone	Riparian Conservation Areas (RCAs) and Critical Aquatic Refuges (CARs)	General Monument ¹	Protected Activity Centers (PACs), Den Sites, Home Range Core Areas (HRCAs)	Giant Sequoia Groves	Tribal Fuels Emphasis Treatment Area (TFETA)
Southern Sierra Fisher Conservation Area (SSFCA)	N/A	Apply Old Forest.	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Defense Zone (S&G #15, p. 85).	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Threat Zone (S&G #18, p. 86).	Apply both.	N/A	Apply PACs, Den Sites, and HRCAs in their respective allocations.	Apply both.	Apply SSFCA and General Monument. ²
Old Forest Emphasis Area	Apply Old Forest.	N/A	Apply Old Forest. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Defense Zone (S&G #15, p. 85).	Apply Old Forest. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Threat Zone (S&G #18, p. 86).	Apply both.	N/A	Apply PACs, Den Sites, and HRCAs in their respective allocations.	Apply both.	Apply Old Forest.
Wildland Urban Intermix (WUI): Defense Zone	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Defense Zone (S&G #15, p. 85).	Apply Old Forest. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Defense Zone (S&G #15, p. 85).	N/A	N/A	Apply both.	N/A	Apply PACs and/or Den Sites in their respective allocations. Apply WUI Defense Zone in HRCAs outside of den sites.	Apply Groves.	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Defense Zone (S&G #15, p. 85).
Wildland Urban Intermix (WUI): Threat Zone	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Threat Zone (S&G #18, p. 86).	Apply Old Forest. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Threat Zone (S&G #18, p. 86).	N/A	N/A	Apply both.	N/A	Apply PACs and/or Den Sites in their respective allocations. Apply WUI Threat Zone in HRCAs outside of den sites.	Apply Groves.	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Threat Zone (S&G #18, p. 86).

¹ The 2001 SNIFFA called this land allocation General Forest. For the Monument, it is called General Monument and includes any area in the Monument that is outside of other allocations. It therefore does not overlap with any other allocations.

² There are no standards and guidelines specific to the TFETA, so fire and fuels management in the TFETA is accomplished using the standards and guidelines for the General Monument allocation, in addition to those standards and guidelines specific to the SSFCA.

Land Allocations/ Management Areas	Southern Sierra Fisher Conservation Area (SSFCA)	Old Forest Emphasis Area	Wildland Urban Intermix (WUI): Defense Zone	Wildland Urban Intermix (WUI): Threat Zone	Riparian Conservation Areas (RCAs) and Critical Aquatic Refuges (CARs)	General Monument ³	Protected Activity Centers (PACs), Den Sites, Home Range Core Areas (HRCAs)	Giant Sequoia Groves	Tribal Fuels Emphasis Treatment Area (TFETA)
Riparian Conservation Areas (RCAs) and Critical Aquatic Refuges (CARs)	Apply both.	Apply both.	Apply both.	Apply both.	N/A	N/A	Apply all applicable S&Gs. Exception: where S&Gs conflict, apply most restrictive.	Apply both.	Apply RCAs and CARs.
General Monument	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Protected Activity Centers (PACs), Den Sites, Home Range Core Areas (HRCAs)	Apply PACs, Den Sites, and HRCAs in their respective allocations.	Apply PACs and/or Den Sites in their respective allocations. Apply WUI Defense Zone in HRCAs outside of den sites.	Apply PACs and/or Den Sites in their respective allocations. Apply WUI Threat Zone in HRCAs outside of den sites.	Apply PACs and/or Den Sites in their respective allocations. Apply WUI Threat Zone in HRCAs outside of den sites.	Apply all applicable S&Gs. Exception: where S&Gs conflict, apply most restrictive.	N/A	N/A	Apply PACs, Den Sites, and HRCAs in their respective allocations.	Apply PACs and/or Den Sites in their respective allocations. Apply WUI Threat Zone ⁴ in HRCAs outside of den sites.
Giant Sequoia Groves	Apply both.	Apply both.	Apply Groves.	Apply Groves.	Apply both.	N/A	Apply PACs, Den Sites, and HRCAs in their respective allocations.	N/A	Apply Groves.
Tribal Fuels Emphasis Treatment Area (TFETA)	Apply SSFCA and General Monument. ⁵	Apply Old Forest.	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Defense Zone (S&G #15, p. 85).	Apply SSFCA. Exception: where fuels treatments are needed to meet fire behavior outcomes, apply WUI Threat Zone (S&G #18, p. 86).	Apply RCAs and CARs.	N/A	Apply PACs and/or Den Sites in their respective allocations. Apply WUI Threat Zone ⁶ in HRCAs outside of den sites.	Apply Groves.	N/A

³ The 2001 SNEPA called this land allocation General Forest. For the Monument, it is called General Monument and includes any area in the Monument that is outside of other allocations. It therefore does not overlap with any other allocations.

⁴ There are no standards and guidelines specific to the TFETA, so the standards and guidelines for the WUI Threat Zone would be used in the HRCAs outside of den sites.

⁵ There are no standards and guidelines specific to the TFETA, so fire and fuels management in the TFETA is accomplished using the standards and guidelines for the General Monument allocation, in addition to those standards and guidelines specific to the SSFCA.

⁶ There are no standards and guidelines specific to the TFETA, so the standards and guidelines for the WUI Threat Zone would be used in the HRCAs outside of den sites.

Suitable Land Uses

National Forest System lands are generally available for a variety of multiple uses, although not all uses are suitable for all areas. Section 6 (g) of the Resource Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA), requires “the identification of the suitability of lands for resource management” (RPA 1974, pp. 4-9).

The definition of suitability is:

The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of economic and environmental consequences and the alternative uses forgone. A unit of land may be suitable for a variety of individual or combined management practices (36 CFR 219.3)

The Sequoia National Forest, as the administrator of the Monument, has identified generally suitable uses for the Monument as guided by current management direction and the Proclamation. The Proclamation makes specific statements about the suitability of the Monument for certain resource-related activities, such as:

- These giant sequoia groves and the surrounding forest provide an excellent opportunity to understand the consequences of different approaches to forest restoration. These forests need restoration to counteract the effects of a century of fire suppression and logging. Fire suppression has caused forests to become denser in many areas, with increased dominance of shade-tolerant species. Woody debris has accumulated, causing an unprecedented buildup of surface fuels. One of the most immediate consequences of these changes is an increased hazard of wildfires of a severity that was rarely encountered in pre-Euroamerican times. Outstanding opportunities exist for studying the consequences of different approaches to mitigating these conditions and restoring natural forest resilience (Clinton 2000, pp. 24095-24096).
- All federal lands and interests in lands within the boundaries of this Monument are hereby appropriated and withdrawn from entry, location,

selection, sale, leasing, or other disposition under the public land laws including, but not limited to, withdrawal from locating, entry, and patent under the mining laws and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument (Clinton 2000, p. 24097).

- No portion of the monument shall be considered to be suited for timber production, and no part of the monument shall be used in a calculation or provision of a sustained yield of timber from the Sequoia National Forest (Clinton 2000, p. 24097).
- The plan will provide for and encourage continued public and recreational access and use consistent with the purposes of the monument (Clinton 2000, p. 24097).
- For the purposes of protecting the objects included in the monument, motorized vehicle use will be permitted only on designated roads, and non-motorized mechanized vehicle use will be permitted only on designated roads and trails, except for emergency or authorized administrative purposes or to provide access for persons with disabilities (Clinton 2000, p. 24098).
- Laws, regulations, and policies pertaining to administration by the Department of Agriculture of grazing permits and timber sales under contract as of the date of this proclamation on National Forest System lands within the boundaries of the monument shall continue to apply to lands within the monument (Clinton 2000, p. 24098).

This section describes general land use suitability and provides guidance for making decisions about future proposed projects and activities, but does not constitute a commitment or a decision to approve any particular projects or activities.

The following tables display the suitability of specific land uses or activities in both static and overlapping land allocations and management areas. Suitability is expressed as suitable, not suitable, designated areas (existing uses and areas only), regulated by the state (California Department of Fish and Game

[CDF&G]), suitable unless otherwise restricted, suitable for authorized use, or by exception. “By exception” means the use or activity is not generally compatible with that land allocation or management area, but it may be appropriate, depending on specific site conditions or under certain circumstances, such as the collection of culturally important special forest products in the backcountry at a certain time of year. NEPA analyses for site-specific projects may need to be conducted to determine specific instances where exceptions are warranted.

Land allocations and management areas are described and discussed in the previous section. For the dynamic land allocations (not included in these tables), suitability will be addressed with standards and guidelines developed for those allocations. A complete list of the standards and guidelines by resource area is available in Part 3.

Table 4 Suitable Land Uses and Activities by Static Land Allocation or Management Area

Land Use or Activity	Wilderness	Wild and Scenic Rivers	Backcountry (Inventoried Roadless Areas)	Giant Sequoia Groves ⁽¹⁾	Southern Sierra Fisher Conservation Area	Old Forest Emphasis	General Monument	Research Natural Areas	Botanical Areas, Geological Area
Resource Management									
Prescribed Fire	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Managed Wildfire	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Hand Treatments for Fuels Reduction ⁽²⁾	By Exception ⁽³⁾	By Exception	Suitable	Suitable	Suitable ⁽⁴⁾	Suitable	Suitable	Suitable	Suitable
Mechanical Treatments for Fuels Reduction ⁽⁵⁾	Not Suitable	By Exception	By Exception	Suitable	Suitable	Suitable	Suitable	By Exception	Suitable
Removal of Felled Trees ⁽⁶⁾	Not Suitable	By Exception	By Exception	Suitable	Suitable	Suitable	Suitable	By Exception	Suitable
New Road Construction	Not Suitable	Suitable	By Exception	Not Suitable	Suitable	Suitable	Suitable	By Exception	Suitable
Road Reconstruction	Not Suitable	Suitable	By Exception	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Trail Construction or Reconstruction	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Administrative Facilities ⁽⁷⁾	By Exception	Suitable	Suitable	By Exception	Suitable	Suitable	Suitable	By Exception	By Exception

1. For implementing site-specific projects, this applies only within the grove administrative boundary, not in the Zone of Influence (ZOI).
 2. Includes the use of chainsaws, handsaws, axes, and loppers.
 3. By Exception: use or activity is not generally compatible with that land allocation or management area, but may be appropriate, depending on specific site conditions or under certain circumstances, such as the collection of culturally important special forest products in the backcountry at a certain time of year.
 4. As allowed in the standards and guidelines.
 5. Includes the use of mechanized equipment; only where clearly needed for ecological restoration and maintenance or public safety.
 6. Only where clearly needed for ecological restoration and maintenance or public safety.
 7. Including trailheads, day use areas, lookouts, district offices.

Land Use or Activity	Wilderness	Wild and Scenic Rivers	Backcountry (Inventoried Roadless Areas)	Giant Sequoia Groves ⁽¹⁾	Southern Sierra Fisher Conservation Area	Old Forest Emphasis	General Monument	Research Natural Areas	Botanical Areas, Geological Area
Scientific Study and Monitoring	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Human Use									
Recreation Residence Tracts	Not Suitable	Designated Areas ⁽⁸⁾	Designated Areas	Designated Areas	Suitable	Designated Areas	Designated Areas	Not Suitable	Designated Areas
Organizational Camps	Not Suitable	Suitable unless otherwise restricted	Designated Areas	Designated Areas	Suitable	Designated Areas	Suitable unless otherwise restricted	Not Suitable	Designated Areas
Lodges and Resorts	Not Suitable	Suitable unless otherwise restricted	Suitable unless otherwise restricted	Designated Areas	Suitable	Suitable	Suitable	Not Suitable	Designated Areas
Developed Recreation Sites	Not Suitable	Suitable unless otherwise restricted	Suitable unless otherwise restricted	Suitable	Suitable	Suitable	Suitable	Not Suitable	Suitable
Dispersed Recreation Sites	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable	Suitable
Hunting and Fishing	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable
Motorized Use of Roads	Not Suitable	Designated Roads Only	Designated Roads Only	Designated Roads Only	Designated Roads Only	Designated Roads Only	Designated Roads Only	Designated Roads Only	Designated Roads Only
Motorized Use of Trails ⁽⁹⁾	Not Suitable	Designated Only ⁽¹⁰⁾	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable

8. Designated Areas: existing uses and areas only.

9. This activity is not suitable as stated in the Proclamation.

10. Motorized use is allowed on Forest Trails 27E04 and 27E05 in KRSMA by law (P.L. 100-150).

Land Use or Activity	Wilderness	Wild and Scenic Rivers	Backcountry (Inventoried Roadless Areas)	Giant Sequoia Groves ⁽¹⁾	Southern Sierra Fisher Conservation Area	Old Forest Emphasis	General Monument	Research Natural Areas	Botanical Areas, Geological Area
Motorized or Mechanized Cross Country Travel ⁽¹¹⁾	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Non-motorized Mechanized Vehicle Use of Roads and Trails	Not Suitable	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted
Temporary Special Uses ⁽¹²⁾	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted
Commodity and Commercial Uses									
Communication Sites	Designated Areas	By Exception	Designated Areas	Designated Areas	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Designated Areas	Designated Areas
Utility Corridors	Designated Areas	By Exception	Designated Areas	Designated Areas	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Suitable Unless Otherwise Restricted	Designated Areas	Not Suitable
Livestock Grazing	Suitable	Suitable	Suitable	Designated Areas	Suitable	Suitable	Suitable	Not Suitable	Suitable
Wood Products (firewood)	Not Suitable	Suitable for Authorized Use	By Exception	By Exception	Suitable for Authorized Use	Suitable for Authorized Use	Suitable for Authorized Use	Not Suitable	By Exception

11. This activity is not suitable as stated in the Proclamation.

12. Includes weddings, fishing events, historical reenactments, and other recreation events.

Land Use or Activity	Wilderness	Wild and Scenic Rivers	Backcountry (Inventoried Roadless Areas)	Giant Sequoia Groves ⁽¹⁾	Southern Sierra Fisher Conservation Area	Old Forest Emphasis	General Monument	Research Natural Areas	Botanical Areas, Geological Area
Special Forest Products	Not Suitable	Suitable for Authorized Use	By Exception	By Exception	Suitable for Authorized Use	Suitable for Authorized Use	Suitable for Authorized Use	Not Suitable	By Exception
Minerals Exploration and Development ⁽¹³⁾	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable

13. This activity is not suitable as stated in the Proclamation.

Table 5 Suitable Land Uses and Activities by Overlapping Land Allocation or Management Area

Land Use or Activity	Overlapping Land Allocations/Management Areas		
	Wildland Urban Intermix: Defense Zone	Wildland Urban Intermix: Threat Zone	Tribal Fuels Emphasis Treatment Area
Resource Management			
Prescribed Fire	Suitable	Suitable	Suitable
Managed Wildfire	Suitable	Suitable	Suitable
Hand Treatments for Fuels Reduction ⁽¹⁾	Suitable	Suitable	Suitable
Mechanical Treatments for Fuels Reduction ⁽²⁾	Suitable	Suitable	Suitable
Removal of Felled Trees ⁽³⁾	Suitable	Suitable	Suitable
New Road Construction	Suitable	Suitable	Suitable
Road Reconstruction	Suitable	Suitable	Suitable
Trail Construction or Reconstruction	Suitable	Suitable	Suitable
Administrative Facilities ⁽⁴⁾	Suitable	Suitable	Suitable
Scientific Study and Monitoring	Suitable	Suitable	Suitable
Human Use			
Recreation Residence Tracts	Designated Areas ⁽⁵⁾	Designated Areas	Designated Areas
Organization Camps	Suitable unless otherwise restricted	Suitable unless otherwise restricted	Suitable unless otherwise restricted
Lodges and Resorts	Suitable unless otherwise restricted	Suitable unless otherwise restricted	Suitable unless otherwise restricted
Developed Recreation Sites	Suitable unless otherwise restricted	Suitable unless otherwise restricted	Suitable unless otherwise restricted
Dispersed Recreation Sites	Suitable unless otherwise restricted	Suitable unless otherwise restricted	Suitable unless otherwise restricted
Hunting and Fishing	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable	Regulated by the state (CDF&G) Suitable
Motorized Use of Roads	Designated Roads Only	Designated Roads Only	Designated Roads Only
Motorized Use of Trails	Not Suitable	Not Suitable	Not Suitable
Motorized or Mechanized Cross Country Travel	Not Suitable	Not Suitable	Not Suitable
Nonmotorized Mechanical Vehicle Use of Roads and Trails	Suitable	Suitable	Suitable

1. Includes the use chainsaws, handsaws, axes, and loppers.

2. Includes the use of mechanized equipment. Only where clearly needed for ecological restoration and maintenance or public safety.

3. Only where clearly needed for ecological restoration and maintenance or public safety.

4. Including trailheads, day use areas, lookouts, district offices.

5. Designated Areas: existing uses and areas only.

Land Use or Activity	Overlapping Land Allocations/Management Areas		
	Wildland Urban Intermix: Defense Zone	Wildland Urban Intermix: Threat Zone	Tribal Fuels Emphasis Treatment Area
Temporary Special Uses ⁽⁶⁾	Suitable	Suitable	Suitable
Commodity and Commercial Uses			
Communication Sites	Suitable	Suitable	Suitable
Utility Corridors	Suitable	Suitable	Suitable
Livestock Grazing	Suitable	Suitable	Suitable
Wood Products (firewood)	Suitable	Suitable	Suitable
Special Forest Products	Suitable	Suitable	Suitable
Minerals Exploration and Development	Not Suitable	Not Suitable	Not Suitable

6. Includes uses such as weddings, fishing events, historical reenactments, other recreation events, or outfitter guides.

Strategies and Objectives

This part of the Monument Plan sets forth strategies and objectives for achieving or maintaining the desired conditions for the Monument, as established in Part 1. Strategies describe the general approach that the responsible official will use to achieve the desired conditions. Strategies establish priorities in management effort and a sense of focus for objectives.

Objectives exist for some, but not all, resource areas. Objectives are concise projections of measurable, time-specific outcomes that are consistent with the strategies. They provide a way to measure progress toward achieving or maintaining desired conditions. When a time frame has been provided for meeting an objective, the intent is to meet the objective within that time frame, or as soon as reasonably possible thereafter, and as funding allows.

In response to the Proclamation, the management strategies and objectives are focused on the resource areas affected by this plan amendment. These resource areas are:

- Scientific Study and Adaptive Management
- Vegetation, including Giant Sequoias; Fire and Fuels; and Wildlife and Plant Habitat

- Air Quality
- Range
- Hydrological Resources
- Groundwater
- Geological Resources
- Paleontological Resources
- Soils
- Human Use (including Recreation, Scenery, and Socioeconomics)
- Cultural Resources
- Transportation (including the Transportation System and Trails and Motorized Recreation)
- Special Areas, including Special Interest Areas

Scientific Study and Adaptive Management

Figure 3 Overview of Adaptive Management Based on Scientific Study and Monitoring

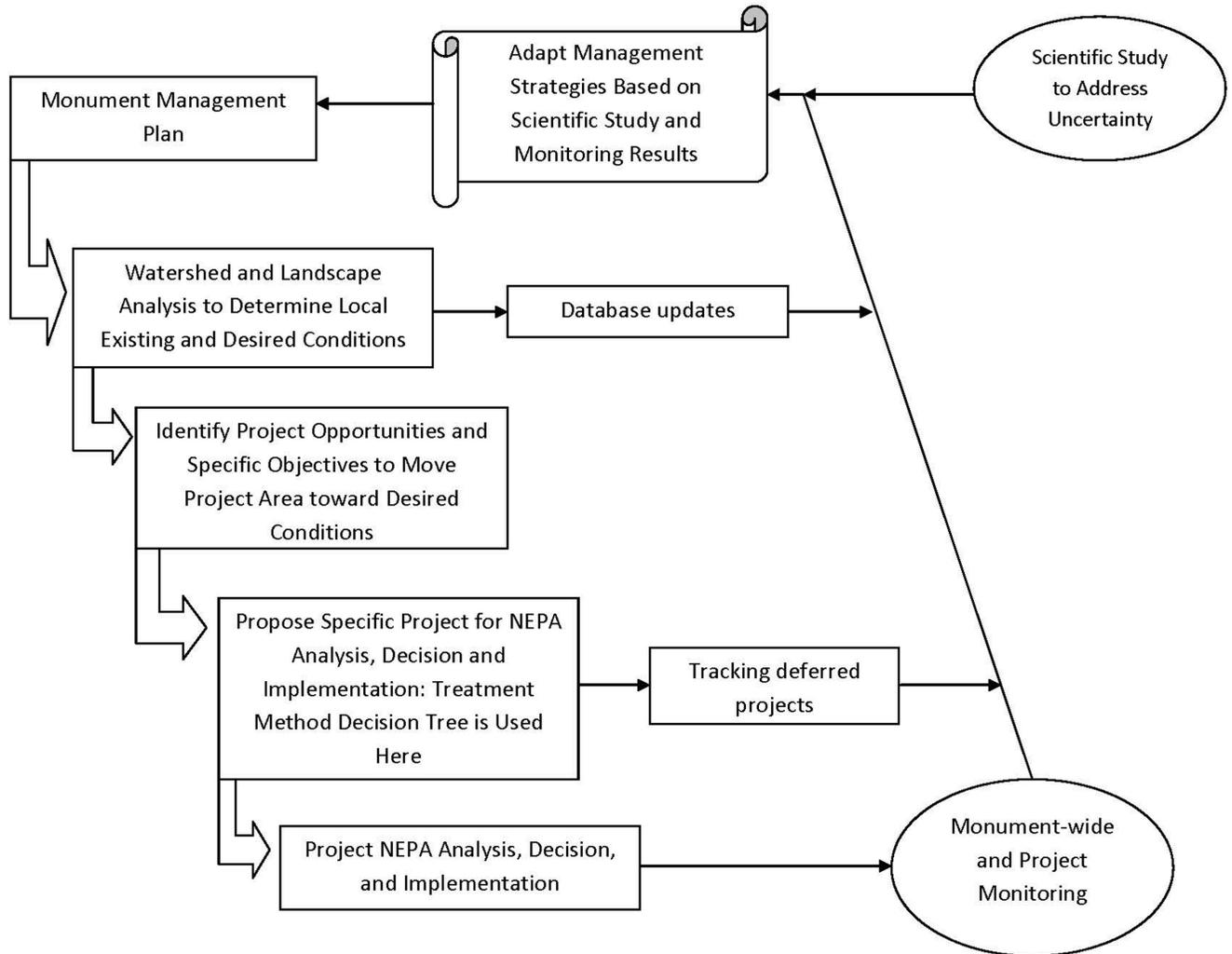


Table 6 Strategies for Scientific Study and Adaptive Management

Strategy
1. Propose scientific study and management activities that respond to the advice provided in the science advisories, where applicable and practicable. Use the joint strategic framework, “A Strategic Framework for Science in Support of Management in the Southern Sierra Nevada Ecoregion,” developed with the National Park Service, to incorporate current and new science.
2. Encourage research to assist in defining agents of change, such as climate, invasive species, ecological succession, and air pollution.
3. Foster partnerships dealing with science.
4. Conduct research regarding objects of interest, including paleontological, cultural, and geological resources, for which there is little current science available.
5. Conduct social science and recreation research to better understand connection to place (including objects of interest), levels of acceptable change, and future use trends.
6. Conduct research to determine whether species shifts are occurring and whether these are associated with climate change factors, such as shifts in habitat characteristics.

Strategy
7. Study the archaeological sites recording Native American occupation and adaptations to this complex landscape, and the roles prehistoric peoples played in shaping the ecosystems on which they depended (Clinton 2000, p. 24095).
8. Study the archaeological remains of historic logging and giant sequoia regeneration since logging, and study forest resilience to large-scale logging and the consequences of different approaches to forest restoration (Clinton 2000, p. 24097).
9. Conduct research “to understand the consequences of different approaches to forest restoration...” and “the consequences of different approaches to mitigating these conditions [unprecedented buildup of surface fuels, increased hazard of wildfires] and restoring natural forest resilience” (Clinton 2000, p. 24095-24096).

Table 7 Objectives for Scientific Study and Adaptive Management

Objective
1. During the life of the Monument Plan, ⁽¹⁾ encourage and coordinate at least two scientific studies in the giant sequoia groves to research resilience to agents of change such as fire, drought, insects, disease, and climate change. Design experiments to investigate the responses, including regeneration, of giant sequoias to changes in temperature and moisture, and the complex interactions of these two factors. Publish results within 10 years of study initiation.
2. During the life of the Monument Plan, continue and expand research on the effects of management activities on Pacific fisher and its habitat to better understand how these activities influence individuals, important habitat components, prey resources, and competition with other predators. Evaluate the research findings as available and refine management direction.
3. Within 5 years, encourage and coordinate scientific studies in giant sequoia regeneration and in the growth of older giant sequoias subjected to disturbance.
4. During the life of the Monument Plan, use landscape analysis information to identify opportunities for site-specific ecological restoration projects.

1. The work toward achieving the objectives in this plan will begin upon plan implementation. When a time frame has been provided for meeting an objective, the intent is to meet the objective within that time frame, or as soon as reasonably possible thereafter.

Vegetation, including Giant Sequoias; Fire and Fuels; and Wildlife and Plant Habitat

Vegetation management, fuels management, and wildlife habitat management are intricately linked, relying on the structure, function, and composition

of vegetation. Because of this, the strategies and objectives for these three resource areas are covered together in this section.

Vegetation Strategies

Table 8 Strategies Specific to Giant Sequoias

Strategy
1. As part of the fuel load reduction plan for each giant sequoia grove, ⁽¹⁾ emphasize the protection of: <ul style="list-style-type: none"> • Large giant sequoia trees • Large trees of other species, including pines, red firs, incense cedars, and black oaks.
2. Protect naturally-occurring isolated giant sequoias located outside of grove administrative boundaries and near areas of human use from vegetation management activities, giving special consideration to the root systems. When practical, preserve them within wildlife clumps or within areas reserved to meet seral stage diversity requirements.

1. Using the grove administrative boundary.

Strategy
3. Provide additional protection to the named giant sequoias—Boole, President Bush, and Chicago Stump—from fuels reduction activities, wildfires, and from human disturbance that can damage tree health, such as peeling bark and trampling on roots. Protect these specific trees by pulling fuels away from the base of the trees or removing ladder fuels that could promote a crown fire in them.
4. Give the designation of “grove” to any detached naturally-occurring group (10 or more giant sequoia trees, with at least 4 trees with a dbh of 3 feet or larger) located outside an existing grove’s administrative boundary. If previously unknown giant sequoia trees of any size and number are discovered outside a grove’s administrative boundary, modify the boundary according to the standards and guidelines. Develop a zone of influence (ZOI) within which key ecological processes, structures, and functions should be evaluated to ensure that the giant sequoia groves are preserved, protected, and restored (North et al. 2000).



Picture 22 The Boole Tree

Table 9 Strategies for Climate Change/Carbon Sequestration

Strategy
5. Design forest management techniques to forestall impacts to high value resources, such as retention of named giant sequoia trees.
6. Improve the potential for forest ecosystems to return to desired conditions following natural disturbances, such as through the use of prescribed fire, managed wildfire, or mechanical treatments to reduce ladder fuels or tree densities.
7. Restore essential ecological processes and patterns (for example, structural heterogeneity) to reduce impacts of current stressors.
8. Provide mitigation measures for minimizing short-term greenhouse gas emissions and promoting long-term sequestration of carbon resulting from site-specific project activities.

Table 10 Strategies for Ecological Restoration

Strategy
9. Accomplish ecological restoration, in part, through the reduction of fuels by decreasing down woody material, ladder fuels, and brush.
10. Promote heterogeneity in plantations and young stands by encouraging more diversity in species composition and age. Reduce stand density in young stands and encourage shade-intolerant species such as giant sequoia, pine, and oak.
11. Improve stand resilience and health by varying spacing of trees both inside and outside of giant sequoia groves.
12. Encourage natural regeneration of tree species, including giant sequoia. In areas where natural regeneration is not likely, use planting as determined in site-specific project analysis.
13. Promote resiliency in Monument ecosystems by using the following tools, in order of priority: prescribed fire, mechanical treatment, managed wildfire (when available)

Table 11 Strategy for Pest Management

Strategy
14. Continue using integrated pest management, allowing carefully controlled, limited use of pesticides to rapidly control pests and encourage a natural environment.

Vegetation Objectives (by Type)

Vegetation and fuels management focus on the first two decades of time for ecological restoration, tree

and stand resiliency, and the reduction of surface and ladder fuels.

Table 12 Objectives for Giant Sequoias

Objective
1. Within 20 years, complete a grove-specific fuel load reduction plan for each giant sequoia grove in the Monument.
2. Within 20 years, accomplish ecological restoration projects in the WUI defense zone in the giant sequoia groves.
3. Within 20 years, accomplish ecological restoration projects in 25 percent of the giant sequoia groves outside of the WUI defense zone.

Table 13 Objectives for Mixed Conifer

Objective
4. Manage vegetation to: <ul style="list-style-type: none"> • Change approximately 2 percent of the mixed conifer types to an early seral phase in giant sequoia groves per decade. • Change approximately 1 percent of the mixed conifer types to an early seral phase outside of groves per decade. • Change approximately 10 percent of the mixed conifer types to reduce fuels and increase tree growing space in groves per decade. • Change approximately 6 percent of the mixed conifer types to reduce fuels and increase tree growing space outside of groves per decade.

Table 14 Objective for Blue Oak–Interior Live Oak

Objective
5. For the life of the plan, keep the total acreage of the blue oak vegetation type stable.

Table 15 Objectives for Chaparral–Live Oak

Objective
6. Manage vegetation to change approximately 6 percent of the chaparral vegetation types to an early seral phase outside of groves per decade.

Table 16 Objectives for Montane Hardwood–Conifer

Objective
<p>7. Manage vegetation to:</p> <ul style="list-style-type: none"> • Change approximately 24 percent of the montane hardwood-conifer vegetation types to an early seral phase in giant sequoia groves per decade. • Change approximately 2 percent of the montane hardwood-conifer types to an early seral phase outside of groves per decade. • Change approximately 12 percent of the montane hardwood-conifer types to reduce fuels and increase tree growing space in groves per decade. • Change approximately 9 percent of the montane hardwood-conifer types to reduce fuels and increase tree growing space outside of groves per decade.

Table 17 Objectives for Red Fir

Objective
<p>8. Manage vegetation to:</p> <ul style="list-style-type: none"> • Change approximately 3 percent of the red fir vegetation types to an early seral phase in giant sequoia groves per decade. • Change approximately 1 percent of the red fir types to an early seral phase outside of groves per decade. • Change approximately 1 percent of the red fir types to reduce fuels and increase tree growing space in groves per decade. • Change approximately 1 percent of the red fir types to reduce fuels and increase tree growing space outside of groves per decade.

Fire and Fuels Strategies

Table 18 Strategies for Fire and Fuels

Strategy
1. Focus fire prevention programs on recreation use and residential areas.
2. When the use of fire is not appropriate (poor air quality days) or desirable (an abundance of ladder fuels that pose a threat to public safety or adjacent communities), mechanical treatments ⁽¹⁾ can be used to accomplish fuel management objectives.
3. Promote a range of natural fire effects by allowing low, moderate, and high intensity fires to burn in the Monument.
4. For fires started by natural ignitions (lightning strikes), determine whether to allow them to burn on a case-by-case basis.
5. Conduct prescribed burning at various times of the year, and with different prescriptions (firing patterns), to maximize biodiversity and to avoid undesirable changes from repeated burning at the same time of year.
6. Avoid aerial application of retardant or foam within 300 feet of waterways. This does not require the helicopter or air tanker pilot in command to fly in such a way as to endanger his or her aircraft, other aircraft or structures, or compromise ground personnel safety.

1. Mechanical treatment is the use of self-propelled equipment.

Table 19 Strategies for Ecological Restoration

Strategy
7. Restore fuel conditions to allow fire to burn in its characteristic pattern and allow fire to resume its ecological role.
8. Manage fire and fuels to produce a vegetation mosaic of age classes, tree sizes, and species composition to protect the objects of interest and help maintain environmental, social, and economic benefits, such as those associated with tourism.
9. Manage some high-intensity fires on a limited basis and tolerate relatively high mortality to reduce fuels or to improve the diversity of vegetation and habitat characteristics in the Monument.
10. Prioritize treatments for fuels reduction and ecological restoration by land allocations/management areas as follows: <ol style="list-style-type: none"> 1. WUI defense zones 2. TFETA areas of high and moderate fire susceptibility within 1/4-mile of the reservation boundary (see following map) 3. WUI threat zone 4. Giant sequoia groves (not previously treated in 1 through 3) 5. TFETA areas of high fire susceptibility (not previously treated in 2) 6. Old forest emphasis areas (not previously treated in 1 through 5)

Table 20 Strategies for Fuels Reduction

Strategy
11. Locate fuel treatments and manage wildfires (when available) across broad landscapes so that the spread and intensity of wildfire is reduced.
12. Locate the tribal fuels emphasis treatment area (TFETA) along the eastern boundary of the Tule River Indian Reservation (see following map). Focus fuel treatments in the TFETA to slow the spread of fire and to protect the objects of interest in the Monument, the reservation, and their watersheds from severe fire effects. The first priority for fuel reduction treatments in the TFETA is those areas within 1/4 mile of the reservation boundary with high and moderate fire susceptibility, and in the Long Canyon area.
13. Use the following tools for fuels reduction, in order of priority: prescribed fire, mechanical treatment, managed wildfire (when available).

Table 21 Strategies Specific to WUI Management

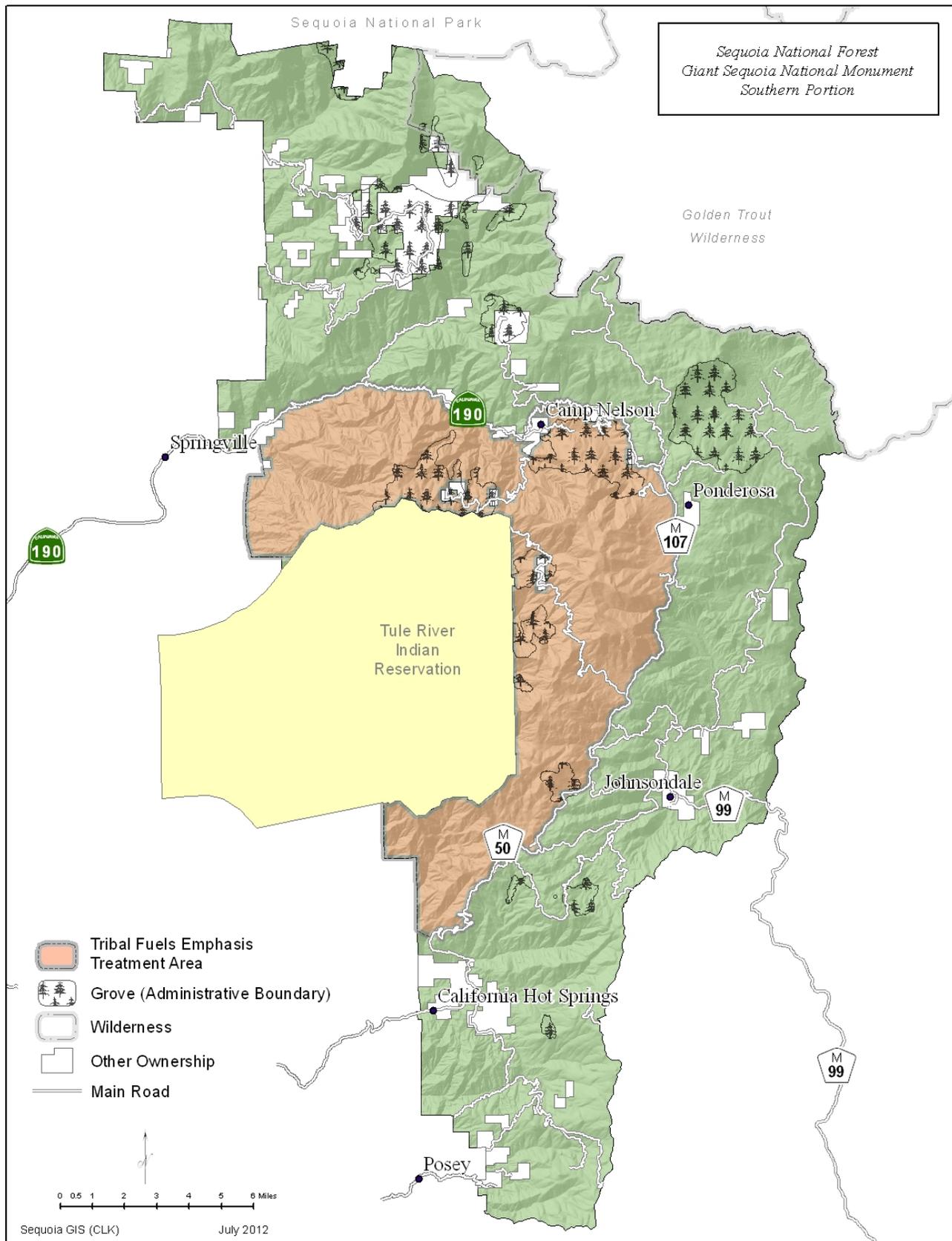
Strategy
14. Allow low, moderate, and high intensity fires to burn in the Monument, including within giant sequoia groves.
15. Provide a minimum 100-foot defensible space (CFR Section 4291) for all structures on administrative sites, structures authorized by permit, and for developments adjacent to National Forest System lands.

Fire and Fuels Objectives

Table 22 Objectives for Fire and Fuels

Objective
1. Meet at least once annually with cooperating agencies to coordinate prescribed burning plans for projects located on adjacent lands and to coordinate fire protection activities.
2. Use grove-specific fuel load reduction plans to determine where mechanical treatments are needed prior to the re-introduction of fire.
3. Re-introduce fire to achieve ecological restoration goals in the giant sequoia groves on an average of 5 percent of grove acres per year, according to their fuel load reduction plans.

Map 3 Tribal Fuels Emphasis Treatment Area



Prioritizing Fuel Load Reduction in Giant Sequoia Groves

The MSA and the Proclamation both recognized the need for fuels reduction treatments in the Monument and, in particular, in the giant sequoia groves. The MSA directed that the groves be inventoried and evaluated for their fuel load build-up. “Based on this inventory and evaluation, Groves, or parts of Groves, with risks of catastrophic fire and/or exclusion of new giant sequoia regeneration because of unnatural fuel load build-up will be identified and prioritized for fuel load reduction treatment.” The Proclamation discussed the build-up of fuels as a reason for forest restoration.

... a century of fire suppression has led to an unprecedented failure in sequoia reproduction in otherwise undisturbed groves... These giant sequoia groves and the surrounding forest provide an excellent opportunity to understand the consequences of different approaches to forest restoration. These forests need restoration to counteract the effects of a century of fire suppression and logging. Fire suppression has caused forests to become denser in many areas, with increased dominance of shade-tolerant species. Woody debris has accumulated, causing an unprecedented buildup of surface fuels. One of the most immediate consequences of these changes is an increased hazard of wildfires of a severity that was rarely encountered in pre-Euroamerican times (Clinton 2000, p. 24095).

The MSA required a grove inventory for each grove. All fieldwork for these inventories and data analysis have been completed, providing better site-specific information on fuel loading, giant sequoia regeneration, and large tree abundance. Although the MSA requested an inventory of every giant sequoia tree over three feet in diameter, this was only done in two of the smaller groves, Cunningham and Agnew. The large, complex area covered by groves made a 100 percent inventory prohibitive in terms of both time and money. The rest of the groves were sampled using standard forest inventory procedures, with plots distributed throughout the grove to obtain reliable estimates of species abundance and distribution. Preliminary results from these inventories suggest that fuel loading is generally high or very high in

the groves, and giant sequoia regeneration is sparse except in larger openings or plantations.

The MSA required an approved fuel load reduction plan to use mechanical treatment methods in giant sequoia groves. The Black Mountain Giant Sequoia Grove Fuel Load Reduction Evaluation (2008) was developed to meet this requirement. This evaluation can be used as a template for future sequoia grove fuel reduction plans.

Each fuel load reduction plan will include a description of existing conditions and the need for treatment within the groves as well as the area surrounding the groves. As displayed in the Black Mountain Giant Sequoia Grove Fuel Reduction Evaluation, the following condition information and data should be included in each sequoia grove plan.

- Fire history
- Fire return interval departure (FRID)
- Fire behavior
- Fuel loading (current grove inventories)
- Fuel treatment goals

The most recent inventories of fuel load will be used to develop each grove’s fuel load reduction plan. However, since most groves have fuel loads that exceed desirable levels, this data will not likely be a deciding factor in prioritizing the groves for treatment. Similarly, the fire return interval departure (FRID) will not be used in prioritizing groves for treatment because almost 90 percent of the groves are classified as either high or extreme FRID. In addition, forest health, as determined from the most recent forest aerial detection surveys, does not show a manageable difference in tree mortality between groves that could be attributed to insect or disease.

The identification and prioritization of groves or parts of groves for fuel reduction treatments will be based on the fire susceptibility in each grove and its surrounding watershed(s). Fire susceptibility considers the expected flame length (hazard) of a wildfire burning in the current level of fuels, the risk of fire occurrence, and how severe a wildfire is expected to be in a given location. Fire severity is defined primarily by elevation, because the amount of moisture and the temperature differ by elevation. Fire

susceptibility is an appropriate tool for prioritizing the groves for treatment because it often varies between groves, it can be measured on the ground, and it can be estimated in models.

It is important to note that fire susceptibility will vary over time. An insect outbreak that causes extensive mortality to associated trees in a grove may increase the fire susceptibility there. Changes in managed animal species may change treatment priorities in certain groves. Changing conditions may change the fire susceptibility in any particular grove, but because fire susceptibility is so closely related to the desired conditions for many resources, it is an important decision tool. Fire susceptibility can be used to help evaluate the potential for damage to the objects of interest, residential or recreational facilities, soils, and watersheds. Fire susceptibility can also serve as a measurable factor in projects designed to encourage canopy openings and early seral habitat with hotter, more severe fires. Fire susceptibility is related to the regeneration of giant sequoia and pines within groves. Fuels treatments that reduce fire susceptibility may also produce site conditions that allow the roots of

tree seedlings to expand in mineral soil and adequate light to reach the seedlings for height growth.

Other factors that will be considered when prioritizing the groves for treatment include, but are not limited to, slope, aspect, tree canopy cover, forest health, fuel loading, access, cooperative agreements with adjacent landowners or other parties, funding opportunities, political and public pressure, safety concerns, recreation opportunities, and imminent threat from wildfire. Various resource objectives and values may be most appropriate to consider at the site-specific project level of analysis. For example, a line officer may choose to treat a grove with a lower fire susceptibility rating for the purposes of recreation, tree regeneration, or project efficiency. However, for every site-specific project in the Monument, decisions for fuels treatments that include tree removal must be based on determinations that they are “clearly needed for ecological restoration and maintenance or public safety” (Clinton 2000, p. 24097). Restoring more natural conditions and protecting the objects of interest and communities fulfill the needs identified in the Proclamation.

Wildlife and Plant Habitat Strategies

Table 23 Strategies for Wildlife and Plant Habitat

Strategy
1. Maintain and improve habitat for endangered and threatened plant and animal species on federal and state lists to meet objectives set forth in their recovery and management plans.
2. Protect, increase, and perpetuate old forest ecosystems and provide for the diversity of native plant and animal species associated with old forest ecosystems.
3. Protect high value wildlife habitat from management activities using species-specific standards and guidelines based on land allocations such as PACs, HRCAs, den site buffers.
4. Protect high quality fisher habitat from any adverse effects from management activities, evaluating the effects of site-specific projects with models appropriate to the scale of the project.
5. To protect aquatic, riparian, and meadow ecosystems, use streamside management zones, the aquatic management strategy, and the riparian conservation objectives for riparian conservation areas (RCAs) and critical aquatic refuges (CARs).
6. Manage California condor habitat following the most current U.S. Department of the Interior (USDI) Fish and Wildlife Service California Condor Recovery Plan. Contribute to the recovery of the California condor by protecting roosting and potential nesting sites. Include the management of historic use areas, such as the Starvation Grove historic nest site and the Lion Ridge roost area.
7. Manage wetlands and meadow habitat for willow flycatchers and other species following the standards and guidelines from the 1988 Forest Plan, as modified by the 1990 MSA and the 2004 SNFPA.

Strategy
8. Cooperate with other agencies and researchers on rare species conservation (e.g., the Southern Sierra Nevada Fisher Working Group, the Pacific Southwest Research Station, and the California Department of Fish and Game).
9. Minimize effects to TES plant species and their habitat. Restore and enhance suitable habitat.
10. Minimize the spread of existing infestations and the introduction of invasive non-native species (noxious weeds).

Wildlife and Plant Habitat Objectives

Table 24 Objectives for Wildlife and Plant Habitat

Objective
1. Within 3 years, complete a baseline inventory for invasive species within the Monument.
2. Over the next 10 years, maintain or increase the number of acres of old forest habitat (defined as CWHR vegetation size classes 4, 5, and 6). Maintain structural features important to late forest species including: multiple layers of vegetation, snags, down woody debris and dense canopy cover.

Air Quality

Table 25 Strategies for Air Quality

Strategy
1. Avoid prescribed burning on high visitor use days.
2. Convey condition and trend information of sensitive resources to the U.S. Environmental Protection Agency, California Air Resources Board, and the San Joaquin Valley Air Pollution Control District for regulatory consideration.
3. Use ambient air quality monitoring, in collaboration with research, to understand broad southern Sierra air pollution trends and the contribution of smoke to the total pollution load.

Table 26 Objective for Air Quality

Objective
1. As part of managing prescribed fire and wildfire, develop actions with local air pollution control districts that minimize public exposure to atmospheric pollutants.

Range

Table 27 Strategies for Range

Strategy
1. Maintain or enhance the productivity of all Monument ranges through adequate protection of the objects of interest and the soil, water, and vegetative resources.
2. Contribute to the stability of the ranching community by recognizing its value as part of our heritage, its contribution of food and fiber, and its maintenance of open space.
3. Utilize management systems that ensure cost-effective management of suitable rangelands.
4. Manage rangeland in meadows following the standards and guidelines from the Forest Plan, as modified by the 1990 MSA and the 2004 SNFPA.

Hydrological Resources

Table 28 Strategies for Hydrological Resources

Strategy
1. Restore streams, meadows, wetlands, and other special aquatic features to their desired conditions whenever possible.
2. Design hydrologic restoration projects to improve water storage and retention in riparian and wetland areas for longer flow duration (i.e., upgrading an unstable-sensitive-degraded system to a stable-sensitive system).
3. Maintain sustainable riparian conditions for giant sequoia ecosystems.
4. Manage stream channels to maintain riparian vegetation, transport sediment, and ensure streambank stability.
5. Create a network of long-term monitoring sites within watersheds to determine the current state of riparian and wetland resources and habitat conditions.
6. Determine streambank erosion rates to define baseline conditions and determine if management activities have resulted in change.
7. Determine channel geometry and discharge relationships to define baseline conditions and determine if management activities have resulted in change.
8. Provide for a renewable supply of down logs that can reach the stream channel and provide habitat in riparian areas.
9. Protect aquatic, riparian, and meadow ecosystems, using the Aquatic Management Strategy, Riparian Conservation Areas (RCAs), Riparian Conservation Objectives (RCOs), and Critical Aquatic Refuges (CARs).
10. Manage riparian conservation areas and critical aquatic refuges for species dependent on those areas, while reducing the risks associated with wildfires and allowing for ecological restoration.

Table 29 Objectives for Hydrological Resources

Objective
1. During the life of the Monument Plan, inventory 10 percent of the perennial streams in 6th-field watersheds to determine existing condition.
2. During the life of the Monument Plan, assess meadows for hydrologic function and prioritize ecological restoration needs.
3. During the life of the Monument Plan, based on assessment, restore hydrologic function in priority meadows to enhance riparian habitat.

Groundwater

Table 30 Strategies for Groundwater

Strategy
1. Determine patterns of recharge and discharge and minimize disruptions to groundwater levels that are critical for wetland integrity.
2. Determine the groundwater levels, within a range of natural variability, that provide base flows to maintain and enhance the condition of groundwater-dependent resources and their habitat.
3. Manage springs and their riparian areas as integrated systems.
4. Restore those groundwater-dependent ecosystems, such as meadows and giant sequoia groves with campgrounds, damaged by prior land uses.

Table 31 Objectives for Groundwater

Objective
1. During evaluation of site-specific projects with the potential to affect groundwater (such as recreational development), determine groundwater conditions and evaluate potential effects on groundwater levels and groundwater-dependent ecosystems.
2. During the life of the Monument Plan, evaluate the effects of groundwater pumping on groundwater-dependent resources in 10 wells near giant sequoia groves, meadows, or springs.

Geological Resources

Table 32 Strategies for Geological Resources

Strategy
1. Identify areas where caves, domes, spires, soda springs, and hot springs are located and can be used by recreationists, while protecting and preserving these sites.
2. Enhance opportunities for interpretation and education, including brochures and signs, of geological resources (cave ecosystems, domes, and spires), emphasizing conservation practices and safe cave use.
3. Keep Church Cave and Boyden Cave open for public use under an appropriate permit system.
4. Identify and minimize potential geologic hazards including flood hazards, landslide hazards, and naturally-occurring asbestos (NOA) hazards within the Monument.
5. Establish the Windy Gulch Geological Area as a Special Area.

Table 33 Objectives for Geological Resources

Objective
1. In 2 years, use existing inventories to make a determination of significance for the known caves in the Monument.
2. On an annual basis, evaluate the condition of Church Cave and Boyden Cave, ensuring gates are secured and cave features are protected.
3. Within 5 years, develop a cave management plan for the significant caves in the Windy Gulch Geological Area.

Paleontological Resources

Table 34 Strategies for Paleontological Resources

Strategy
1. Retain areas of significant sedimentation and meadow vegetation deposits.
2. During cave inventories, conduct paleontological evaluations of any fossilized material found.

Table 35 Objective for Paleontological Resources

Objective
1. Initiate surveys to identify the location and type of paleontological resources in the Monument, focusing on areas such as meadows and caves most likely to contain these resources. Use survey data to evaluate risk factors to these resources.

Soils

Table 36 Strategies for Soils

Strategy
1. Protect and improve soils for continuous forest and rangeland productivity and favorable water flows.
2. Maintain a sufficient level of soil cover in the form of fine organic matter to prevent erosion, conserve nutrients, and permit infiltration of precipitation into the soil.
3. Minimize the physical movement or displacement of soil during management activities.
4. Maintain soil porosity for plant growth and hydrologic soil function.
5. Maintain and restore wetland soil moisture conditions, such as in areas along creeks and rivers, and in wet meadows and fens.

Human Use

Table 37 Strategies for Human Use

Strategy
1. Provide visitors with opportunities to recreate in a variety of settings, from primitive to highly developed areas.
2. Develop and manage opportunities for public enjoyment.
3. Provide for wide and varied public use of monument resources and opportunities, while protecting sensitive resources and the objects of interest.
4. Use the Monument recreation niche settings in accordance with current recreation management direction: Rivers and Lakes, Scenic Routes, Great Western Divide, Lloyd Meadow, Hume High Elevation, Wildlands, Front Country, and Kings River Special Management Area OHV.
5. Maintain the assigned Recreation Opportunity Spectrum (ROS) classes (semi-primitive non-motorized, semi-primitive motorized, roaded natural, and rural) (see ROS maps).
6. Manage for new developed recreation facilities as visitor use increases.
7. Accommodate the increasing demand for more specialized and diverse recreation opportunities, in order to provide flexibility to accommodate new and changing recreation activities as they emerge in the future.
8. Balance diverse users and a wide variety of uses, accommodate use through all seasons, and minimize conflicts among recreational users.
9. Maintain or create scenic vistas as necessary to meet the needs of the public and improve scenery in areas of high public concern.
10. In all vegetation treatment and fuels reduction projects consider improving scenery resources especially in areas that do not meet established scenic integrity objectives (SIOs).
11. Provide for the protection of resources, ecological restoration, and the development of stewardship under applicable law and policy, so that people care about the land and its resources.
12. In accordance with the Sequoia National Forest Interpretive Plan (USDA Forest Service 2008a) and the Forest Service conservation education guidance, provide opportunities for interpretation that reflect scientifically-supported scholarship and research data. <ol style="list-style-type: none"> Convey clear messages regarding natural and cultural resources and multiple use. Use multi-media interpretation and educational programs to develop stewardship of resources, to ensure their present and future protection, and to enhance public enjoyment of this unique place. Promote and integrate awareness of Monument history, appreciation for biological processes, education about past and current human use of the Monument, and education about the distinctive yet interrelated disruptive forces involved with the use and protection of resources.

Strategy
13. Emphasize diverse public access, partnerships, and place-based recreation opportunities, focusing on connection to place and the recreation settings (Monument’s recreation niche).
14. Establish use fees that are compatible with cost, and reduce public competition with the private sector.
15. Continue to support and participate in employment and training programs for youth, older Americans, and the disadvantaged, in response to national employment and training needs and opportunities existing in forest surroundings.
16. Develop partnerships to provide a spectrum of recreation experiences through a variety of providers, including the Forest Service, associations, non-government organizations, permit holders, volunteers, and other community groups.
17. Support the efforts of non-profit, public benefit organizations promoting conservation, education, and recreational enjoyment of the Monument and the surrounding southern Sierra Nevada region.
18. Develop partnerships to increase interpretive materials and programs that reach larger segments of the general public and to foster stewardship.
19. Enhance opportunities to connect people to the land, especially those in urban areas and of diverse cultures (connect people to place).
20. Work with gateway communities and communities within the Monument to help foster economic opportunities.
21. Develop bi-lingual ⁽¹⁾ communication tools, including publications, information boards, and radio spots.
22. Encourage communities of color, focusing on youth, to increase involvement in environmental education programs to educate and develop the citizen steward.
23. Designate and develop a Children’s Forest in the Monument to provide a place where youth and families can participate in and explore forest-related projects. The criteria for the location of a Children’s Forest include: <ul style="list-style-type: none"> ● In or in close proximity to a giant sequoia grove ● Within 1/2 mile of a road ● Close to an existing parking lot or a suitable area for one ● Close to developed recreation facilities ● Away from high use, congested areas ● Close to water source ● Year-round access ● Does not conflict with existing uses (such as grazing)

1. English–Spanish

Table 38 Objectives for Human Use

Objective
1. During site-specific project planning, actively engage communities of color in the central valley of California in management planning and conservation education projects.
2. During site-specific project planning, develop partnerships for project implementation.
3. During the life of the Monument Plan, explore the designation and development of a Children’s Forest in the Monument.

Communication with Communities of Color

The Sierra Nevada is the third fastest growing region in California. Some estimates predict the population will triple by 2040. The area is experiencing rapid retiree and commuter resident growth, and large intermittent recreational populations that increase resource pressures. For some time, the Sierra Nevada's economy has been diversifying from primarily a resource-based economy to one increasingly dependent on tourism and related services; specialized goods and services tied to the state economy; and health, financial, and other services needed by the growing population. Many parts of the region face significant threats from natural disaster, in particular the risk of catastrophic fire. There is increasing conflict over various land use decisions in certain portions of the region and over regional resource conservation strategies (Sierra Nevada Conservancy Revised Strategic Plan March 2009—*A Key Sierra Nevada Fact*).

Most visitors to national forests, in particular to locations like the Giant Sequoia National Monument, are more likely to be white or Caucasian than any other ethnic or racial group. However, as the population increases in California, in particular the Central Valley (Kern, Tulare, and Kern counties), more people represent groups of color (communities of color). There are a number of reasons for this disparity in use levels, including a lack of information about outdoor recreational opportunities (Chavez et al. 2008). In the 2000 census, California was 47 percent non-Hispanic white and 32 percent Hispanic. Most of the central San Joaquin Valley had even higher Hispanic percentages—about 38 percent in Kern County, 44 percent in Fresno, Kings and Madera counties, 45 percent in Merced County, and a majority of 51 percent in Tulare County. The continuing shift toward an increasingly diverse society elevates the importance of ensuring that information is provided

through means that are most appropriate to each ethnic and racial group. The Monument will need to produce information, recreation sites, and facilities for this increase in communities of color.

Research shows that communicating with a diverse public requires some variation in media sources to be used as points of contact for reaching different ethnic groups. The heavy reliance on family and friends, particularly in the Hispanic community, translates to the production of various communication tools.

Agency culture is seen as a barrier for multiple reasons including the underrepresentation of non-whites as employees delivering and managing recreation opportunities, communication and education methods that are a poor fit with the needs and preferences of communities of color, planning for a “traditional white” visitor experience, and a general lack of feeling welcomed (Allison and Hibbler 2004, Roberts 2003, Tierney et al. 1998).

To cross a wide variety of communities of color and expand communication opportunities, the Monument will implement the following strategies to communicate with communities of color:

1. Develop bi-lingual communication tools (publications, information boards, radio spots);
2. Establish personal contacts in the community who can be effective in disseminating information on recreation opportunities;
3. Produce newspaper articles to print media, particularly in Spanish;
4. Establish partnerships with Hispanic Chambers of Commerce;
5. Involve and pro-actively encourage communities of color in youth environmental education programs to educate and develop the citizen steward (e.g., MyForest Summit).

Cultural Resources

Table 39 Strategies for Cultural Resources

Strategy
1. Manage cultural resources with a process including identification, evaluation, and allocation to appropriate management categories.
2. Recognize cultural resources through National Register of Historic Places nomination, National Historic Landmark nomination, and other special designations as appropriate.
3. Provide opportunities for public use and enjoyment of cultural resources through education and outreach programs that promote resource stewardship. Focus on the need to protect cultural resources while simultaneously making them available to the public.
4. Provide for continued traditional use by Native American people and protect those places that are most important to local Native American people in maintaining their traditional culture. Seek partnerships with tribes to develop cultural education programs.
5. Protect cultural resources from wildfires and management activities associated with fuels reduction.
6. Develop a cultural resource management plan for the Monument that: <ul style="list-style-type: none"> ● Facilitates scientific research of cultural resources to increase understanding of past human cultures and environments. ● Uses cultural resource data to increase understanding of the evolution of ecosystems and to adapt management practices. ● Preserves and adaptively uses historic structures in place wherever possible; preserves the integrity and character-defining features of historic districts. ● Emphasizes partnerships with tribes to develop cultural education programs.

Table 40 Objective for Cultural Resources

Objective
1. Within 3 years, develop a Monument cultural resource management plan that includes identification, evaluation, and criteria for allocation of the resources to appropriate management categories. This plan will protect cultural resource values while allowing for public enjoyment.

Transportation System

Table 41 Strategies for Transportation System

Strategy
1. Size and maintain the road and trail system to minimize adverse resource effects, while providing appropriate public and administrative access to National Forest System lands and facilities within the Monument.
2. Promote aquatic organism passage at road stream crossings where needed.
3. Maintain roads with effective road drainage and erosion controls to conserve existing soil and reduce effects to adjacent riparian and aquatic systems.
4. Complete 6th-field watershed analyses and review the transportation system in the Monument using forest-scale travel analysis to inform future opportunities for changes in road status, including changes in maintenance level, decommissioning, or conversion to trails.
5. Consult with local tribal governments and Native Americans to provide transportation and access needs for culturally important sites and resources.

Strategy
6. Coordinate transportation planning, management, and road decommissioning with Sequoia and Kings Canyon National Parks; other federal, state, and county agencies; and the Tule River Indian Tribe, to reduce traffic congestion and safety hazards, especially along major travelways.
7. Partner with state and local agencies to operate and maintain roads for four-season use where appropriate.
8. Provide appropriate parking facilities to meet projected use as determined through site-specific project analysis.
9. Base proposals for new roads on the need to provide access to recreation opportunities, other public use, or management activities, as appropriate to the purposes of the Monument.
10. Convert to trails or other uses, or decommission roads not needed to meet management objectives.
11. Emphasize opportunities for creating loop trails where feasible and appropriate.
12. Emphasize opportunities for creating loop roads where feasible and appropriate.
13. Provide and maintain regulatory, warning, directional, and information signing on roads for travelers' use.
14. Manage the roads and trails system to allow: <ul style="list-style-type: none"> • Both highway legal use and off-highway vehicle (OHV) use on designated roads. • Over-snow vehicle (OSV) use on designated roads. • Non-motorized mechanized vehicles (such as bicycles) on designated roads and trails.
Facilities Related Strategies
15. Maintain administrative facilities consistent with wilderness values.
16. Rehabilitate, replace, or relocate existing buildings to support management of the Monument.
17. Maintain buildings to at least the minimum level necessary to protect health and prevent building deterioration.

Table 42 Objectives for Transportation System

Objective
1. Within 2 years, complete travel analysis to determine the minimum necessary transportation system (Subpart A of the Travel Management Rule, 36 CFR 212.5) for the Monument.
2. Within 2 years, complete a Monument-wide watershed improvement needs inventory (WINI) to identify adverse effects to watersheds from roads and trails.
3. During the life of the Monument Plan, establish a sustainable and desirable off-highway vehicle (OHV) and over-snow vehicle (OSV) route system (on the existing road system), including loop opportunities where feasible and appropriate.

Special Areas, including Special Interest Areas

Table 43 Strategies for Special Areas, including Special Interest Areas

Strategy
Proposed Moses Wilderness
1. Manage the Moses Inventoried Roadless Area within the Monument as a proposed wilderness, to preserve the wilderness characteristics until Congress acts.
Freeman Creek Botanical Area
2. Protect and manage this area for public use and enjoyment.
3. Limit vehicle use in the botanical area to existing roads, Forest Roads 20S78 and 22S82, in accordance with FSM 2372.4 (4).

Strategy
4. Manage existing plantations within the botanical area, as needed for ecological restoration, provided that no management prescription outside and up slope of giant sequoias will adversely affect the hydrology of the giant sequoias.
5. Develop partnership agreements with entities interested in promoting the botanical area.
6. Manage the Freeman Creek Trail within the Freeman Creek Botanical Area as Scenery Management System Concern Level 1.
Windy Gulch Geological Area
7. Protect the unique geologic features, including the limestone caverns, rare or endemic cave fauna and flora, and marble roof pendants.
8. Protect and manage this area for public use and enjoyment.
9. Provide opportunities to conduct research in the area for scientific study and understanding of cave ecosystems.
10. Conduct management activities, such as fuel and vegetation treatments, in the area to focus on the protection of the special and unique features within the area.
11. Continue to allow limited access to Church Cave, by permit, to approved cave trip leaders, until the management plan for the area is completed.
Additional Special Areas, including Special Interest Areas
12. Continue coordination with the National Park Service in on-site landmark evaluation studies for Moses Mountain. Protect and manage this candidate area as a national landmark until final resolution.

Table 44 Objectives for Special Areas, including Special Interest Areas

Objective
Proposed Moses Wilderness
1. In accordance with Forest Service Manual direction on wilderness proposals, complete the necessary process.
Freeman Creek Botanical Area
2. Within 5 years, develop a management plan for the Freeman Creek Botanical Area, including inventories and possible research opportunities.
Windy Gulch Geological Area
3. Within 5 years, develop a management plan for the Windy Gulch Geological Area, including inventories and possible research opportunities.
Additional Special Areas, including Special Interest Areas
4. Within five years, develop a management plan for the Moses Mountain Research Natural Area.
5. Within five years, prepare the establishment report for the South Mountaineer Creek area for submission to the Chief, as recommended by the Regional Research Natural Areas Committee for establishment.

Special Areas, including Special Interest Areas

Designated Special Areas

Special areas are places on National Forest System lands identified or designated because of their unique or special characteristics. These include wildernesses, wild and scenic river corridors, special management areas, research natural areas, backcountry (inventoried roadless areas), botanical areas, scenic byways, and geological areas. Special areas have their own sets of management direction.

Several congressionally designated areas are found entirely or partially within the Monument: the Monarch Wilderness, the Golden Trout Wilderness, the Kings Wild and Scenic River, the South Fork Kings Wild and Scenic River, the North Fork Kern Wild and Scenic River, and the Kings River Special Management Area. Within the Monument, the Sequoia National Forest manages approximately 13,290 acres of wilderness, 80,300 acres of roadless area, and 4,670 acres of Wild and Scenic River Corridor. The 24,290 acres of the Kings River Special Management Area in the Monument are administered and managed by the Sierra National Forest.

Part or all of four giant sequoia groves are in the Monarch Wilderness and Agnew Roadless Area: Agnew, Monarch, Deer Meadow, and Evans Complex. The Golden Trout Wilderness contains part or all of three other groves: Maggie Mountain, Upper Tule, and Middle Tule.

Monarch Wilderness

Approximately 8,760 acres of the Monarch Wilderness are in the Monument. The Monarch Wilderness was established by Congress in the California Wilderness Act of 1984, created from the High Sierra Primitive Area and a portion of the Agnew Roadless Area. Shared with the Sierra National Forest, it is located 70 miles east of Fresno, California. Between November and April, the access road is closed because of snow. This is a scenically dramatic area rising from elevations of 4,300 feet along the South Fork of the Kings River to 11,080 feet at Hogback Peak. The Monarch Wilderness contains the only occurrence of white-bark pine in the

Sequoia National Forest. Because of the steep, rugged character of the area, trail access is extremely limited and use is very light.

Golden Trout Wilderness

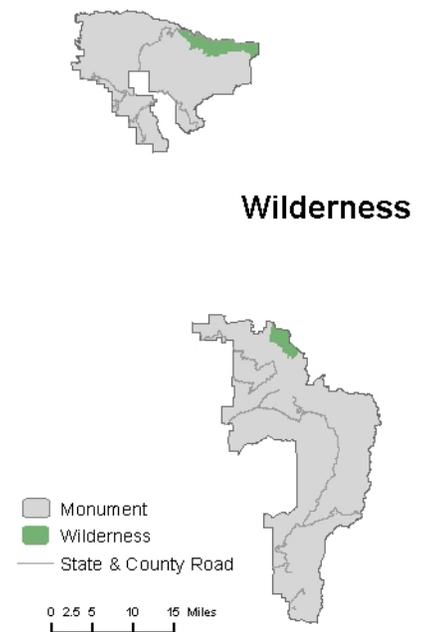
Approximately 4,530 acres of the Golden Trout Wilderness are in the Monument. The Golden Trout Wilderness

was designated by Congress in 1978. Shared with the Inyo National Forest, it gets its name from the brightly colored native trout (California's state fish) and its subspecies, the Little Kern golden trout, a federally listed threatened species, as well as the South Fork Kern golden trout.

Elevations range from 4,700 feet at the Forks of the Kern River to 12,432 feet on Mt. Florence, the highest peak in the Sequoia National Forest. The entire Little Kern River Drainage lies within the Golden Trout Wilderness. The North Fork Kern and South Fork Kern Wild and Scenic Rivers bisect this wilderness. Approximately 150 miles of trails are located in the Golden Trout Wilderness (mostly outside of the Monument). Grey Meadow and Trout Meadows are located on this trail system and receive high use.

Kings Wild and Scenic River

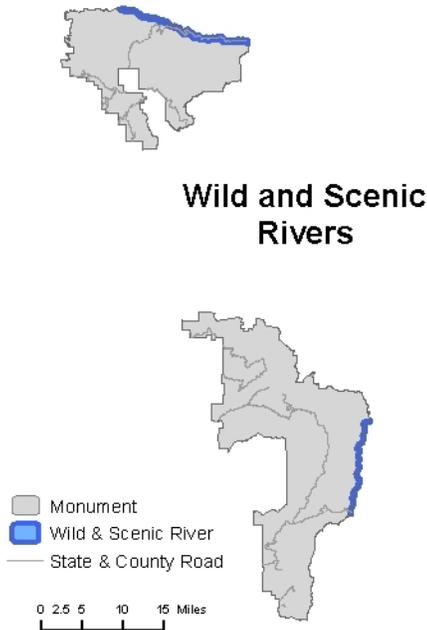
All 5 miles of the Kings Wild and Scenic River lie along the northern boundary of the Monument. In 1987, Congress designated this part of the Kings River, from the confluence of Middle Fork and South Fork Kings Rivers to Garlic Meadow Creek, as the Kings Wild and Scenic River. The Kings River is one



of the largest rivers flowing down the western slopes of the Sierra Nevada and forms the boundary between the Sequoia and Sierra National Forests. The river is wooded, with premium whitewater and several cataracts. The Kings River is a state wild trout stream. Numerous Native American village sites and remnants of one of the longest logging flumes in the world are located in this system. Other historic artifacts create an area of historic and cultural significance.

Whitewater rafting is popular in the lower reaches of the river corridor.

The river flows through a wide canyon near Pine Flat. As the river ascends toward the confluence with the Middle Fork - South Fork, the canyon becomes more narrow and steep. Main ridges on both sides of the river are more than 5,000 feet in elevation above the river. The river exists in a free-flowing state with numerous rapids. Access is limited above Garlic Falls.



South Fork Kings Wild and Scenic River

Approximately 12 miles of the South Fork Kings Wild and Scenic River lie along the northern boundary of the Monument. In 1987, Congress designated 40.5 miles of the South Fork Kings River, from its headwaters in Kings Canyon National Park to its confluence with Middle Fork and Main Kings Rivers, as the South Fork Kings Wild and Scenic River. The headwaters are in the Sequoia and Kings Canyon National Parks, above the timberline in a heavily glaciated basin. The river flows through one of the deepest and most classic glacial canyons in the nation, with several waterfalls and unique geological formations. The South Fork Kings River has complex

floral diversity, with several rare species. Numerous prehistoric sites and a significant cultural resource area exist on the river. The state has designated the river as a Wild Trout Stream. Important peregrine falcon and golden eagle habitat exist in the area.

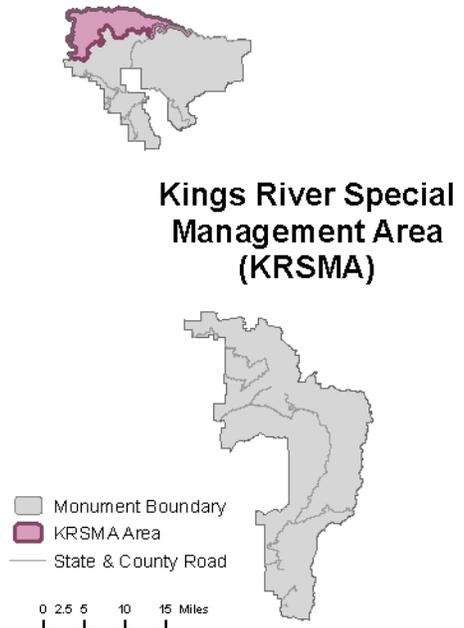
North Fork Kern Wild and Scenic River

Approximately 14 miles of the North Fork Kern Wild and Scenic River lie along the eastern boundary of the Monument. In 1987, Congress designated 78.5 miles of the North Fork Kern River, from its headwaters in Sequoia National Park to the Kern-Tulare County line, as the North Fork Kern Wild and Scenic River. More than 21 miles flow through wilderness, most of this section in a precipitous gorge, and only the lower 17 miles are accessible by road. The section of the Kern River between Lake Isabella and the Johnsondale Bridge is commonly called the Upperkern. Outstanding features for viewing include gray pines, scrub oaks, grass, and dry climate shrubs clinging to steep canyon walls, while cottonwoods and willows line the river.

Kings River Special Management Area (KRSMA)

About 24,290 acres of the KRSMA (of approximately 48,000 total acres) are located within the northern portion of the Monument, adjacent to the Kings River. This special management area was created by Public Law 100-150

in 1987 to provide for public outdoor recreation use and enjoyment; for protection of the natural, archaeological, and scenic resources; and for fish and wildlife management. This public law permits off-highway vehicle



(OHV) use on trails to the same extent and in the same location as was permitted before enactment. This statute takes precedence over the Proclamation (Clinton 2000) that created the Monument, which prohibits OHVs from driving off designated roads. Therefore, within that portion of the special management area located within the Monument, OHV use may still occur on the 3.8 miles of Trails 27E04 and 27E05.

Other Special Areas

Backcountry (Inventoried Roadless Areas)

Roadless areas in the Sequoia National Forest were inventoried as part of the Roadless Area Review and Evaluation

(RARE II) process. The California Wilderness Act of 1984 specifically cited those areas that were adjacent to newly created wilderness or adjacent to existing wilderness, and added them to the existing wilderness areas. The

rest of the roadless areas identified by the RARE II were released to non-wilderness management, were identified as being non-wilderness or “further planning areas,” and were evaluated in the land management planning process for the Forest Plan.

The non-wilderness roadless areas within the Monument, as identified in the Forest Plan, are listed in the following table.



Inventoried Roadless Areas

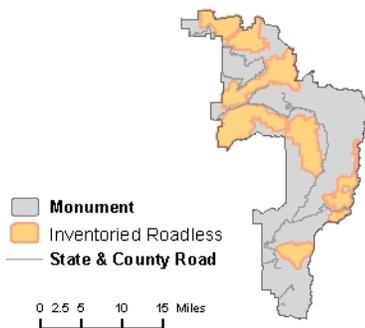


Table 45 Non-Wilderness Roadless Areas

Name	Acres
Agnew	8,580
Black Mountain	15,130
Chico	1,620
Dennison Peak	6,300
Jennie Lakes	2,440
Lion Ridge	5,220
Moses	22,020
Rincon	6,650
Slate Mountain	12,340

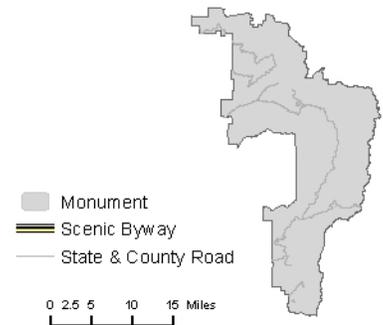
A portion of the Moses Inventoried Roadless Area (about 15,100 acres) will be recommended for inclusion in the National Wilderness Preservation System, as the Moses Wilderness. It will be managed as wilderness while Congress considers its designation (see the Proposed Moses Wilderness Map in Appendix H, Special Area Maps).

Kings Canyon Scenic Byway

The National Scenic Byway Program showcases outstanding national forest scenery and increases public awareness and understanding of all national forest activities. The Kings Canyon Scenic Byway, which is 50 miles long, is the only national forest scenic byway in the Monument (and forest) and is an eligible state scenic highway. The scenic byway nomination report states that this travel corridor is internationally significant with two extraordinary features: towering giant sequoia trees and Kings Canyon (USDA Forest Service 1990).



Kings Canyon Scenic Byway



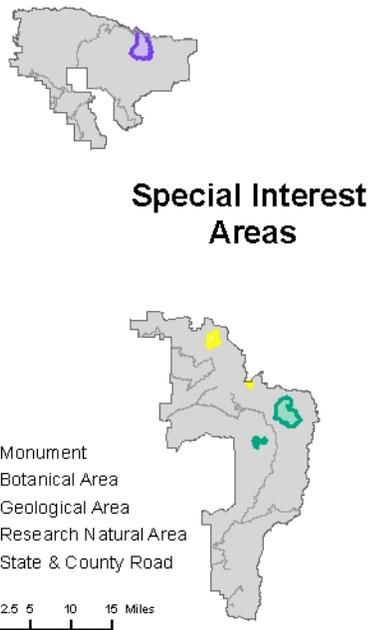
Moses Mountain Research Natural Area

The Moses Mountain Research Natural Area covers approximately 990 acres. In addition to giant sequoias, the area contains rare plant habitat on the rocky east-facing slopes of Moses Mountain, as well as aquatic habitat along the Wishon Fork of the Tule River. Nearly two-thirds of the area lies within the Golden Trout Wilderness. Moses Mountain is managed for the study of giant sequoias in a natural setting.

Slate Mountain Botanical Area

Slate Mountain is unique because of its abundance of sensitive plants. This area was released by Congress for non-wilderness use in the 1984 California Wilderness Act.

The botanical area covers 500 acres along the rocky northern summit comprised of pre-cretaceous metamorphic and metasedimentary rocks surrounded by granitic rocks. Nearly 95 percent of the total population of Twisselmann’s buckwheat occurs on Slate Mountain.



In accordance with the Forest Plan, Slate Mountain is classified and being managed as a botanical area.

Freeman Creek Botanical Area

The Freeman Creek Botanical Area contains the Freeman Creek Grove and covers approximately 4,190 acres. The Freeman Creek Grove, also known as Lloyd Meadow Grove, is the easternmost grove of

giant sequoias and is considered to be among the most recently established. Part of the grove is underlain by a 3-million-year-old volcanic basalt flow. This botanical area is fairly easy to reach by car throughout the summer. There are several noteworthy sequoias to see in this grove, including the President George Bush Tree. This tree was named for President George H.W. Bush when he signed a proclamation on July 14, 1992, to protect all the sequoia groves throughout the Sierra. This proclamation set aside giant sequoia groves in national forests for protection, preservation, and restoration. A beautifully reconstructed trail provides a fully accessible loop around the Bush Tree. Freeman Creek Grove and its surrounding watershed are newly designated and being managed as a botanical area.

South Mountaineer Creek Research Natural Area

The South Mountaineer Creek Research Natural Area covers 1,325 acres, of which 160 acres are in the Monument. An extensive red fir forest dominates the area, which lies in the South Mountaineer Creek watershed in the Golden Trout Wilderness. South Mountaineer Creek, though establishment is still pending, is being managed as a research natural area.

Windy Gulch Geological Area

The 3,500 acres of the Windy Gulch Geologic Area contains a number of outstanding formations, including caves and marble roof pendants. Mesozoic granitic rocks are the dominant rock type and consist of several plutons approximately 100 million years old. The metamorphic rocks are known as the Kings Terrain; the most extensive of these are the Lower Kings River, Kaweah River, and Tule River roof pendants. The Lower Kings River roof pendant includes the Boyden Cave roof pendant, whose marble contains several caves including Boyden Cave and Church Cave.

Appendix H shows all the special areas in the Monument.

Part 3—Design Criteria

Design criteria include legal and regulatory compliance, treatment and clear need criteria, the decision tree, standards and guidelines, and monitoring and evaluation procedures. Design criteria are sideboards for subsequent projects and activities to help achieve the desired conditions.

Legal and regulatory direction, treatment and clear need criteria, the decision tree, standards and guidelines, and monitoring and evaluation procedures are included in this part.

Legal and Regulatory Compliance

The National Environmental Policy Act of 1969 (NEPA) at 40 CFR 1502.25(a) directs “to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with... other environmental review laws and executive orders.” The Monument will be guided by applicable laws, regulations, policies, and guidelines. This Monument Plan supplements, but does not replace, the direction from those sources.

The Monument is guided by direction from numerous sources. The governing source of legal direction is the Proclamation (Clinton 2000); this section discusses other laws and executive orders. Laws passed by Congress such as NEPA, the Organic Act of 1897, the National Forest Management Act of 1976 (NFMA), the Multiple Use Sustained Yield Act of 1964 (MUSYA), and the Endangered Species Act of 1973 (ESA), provide direction for certain aspects of management. At the national level, the Resources Planning Act of 1974 (RPA) gives broad direction and the Administrative Procedure Act of 1966 (APA) (P.L. 79-404) governs the way in which administrative agencies of the federal government may propose and establish regulations.

Applicable laws, regulations, policies, and executive orders, as well as Forest Service manual and handbook guidance, memoranda of understanding, conservation strategies, and programmatic agreements, are listed here by resource. The relevant documents are available on the Forest Service website (<http://www.fs.fed.us/publications/>) and from Forest Service offices. The list included here is not all inclusive.

Scientific Study and Adaptive Management

- Forest Service Handbook (FSH) 1909.12-2006-5, Chapter 40—Science and Sustainability: direction

regarding scientific review guidelines and procedures

Vegetation, including Giant Sequoia Groves

- National Forest Management Act of 1976
- National Forest Resource Management: Forest Service Manual (FSM) 2000—Chapter 2020—Ecological Restoration and Resilience
- Silvicultural Practices Handbook (FSH 2409.17), Silvicultural Examination and Prescription Handbook (FSH 2409.26d)
- Timber Management: FSM 2400—Silvicultural Practices Chapter

Fire and Fuels

- Guidance for Implementation of Federal Wildland Fire Management Policy, February 2009
- Fire Management: FSM 5100

Air Quality

- Federal Clean Air Act: The Federal Clean Air Act (CAA) is the federal law passed in 1963, and last amended in 1990, (42 U.S.C. §7401 et seq.) which is the basis for national control of air pollution.
- National Ambient Air Quality Standards (NAAQS): These are standards for pollutants considered harmful to public health and the environment. The EPA has set the NAAQS for six principal pollutants, which are called “criteria pollutants” (see Table III-2: National ambient air quality standards). Smoke contributes to PM₁₀ and to a lesser degree NO₂, CO, and O₃.

- **Class I areas:** These include national parks, wildernesses, and some U.S. Fish and Wildlife refuges that were in existence at the passage of the 1977 Clean Air Act amendments. These areas are provided special protection from new and modified major stationary sources. Federal land managers are mandated an affirmative responsibility to protect values that might be affected by air pollution, including visibility and other air quality-related values.
 - **Regional Haze Rule:** These regulations require states to review how pollution emissions within the state affect visibility at class I areas across a broad region. These rules also require states to make “reasonable progress” in reducing any effect this pollution has on visibility conditions in class I areas and to prevent future impairment of visibility. The states are required by the rule to analyze a pathway that takes the class I areas from current conditions to “natural conditions” in 60 years. “Natural conditions” is a term used in the Clean Air Act that means that no human-caused pollution can impair visibility. This program, while aimed at class I areas, will improve regional visibility and air quality throughout the country.
 - **Conformity Rule:** This rule implements the Clean Air Act conformity provision, which mandates that the federal government not engage, support, or provide financial assistance for licensing or permitting, or approve, any activity not conforming to an approved state implementation plan.
 - **EPA Interim Policy on Wildland and Prescribed Fire, announced in 1998:** This EPA interim policy integrates two public policy goals: (1) to allow fire to function, as nearly as possible, in its natural role in maintaining healthy wildland ecosystems, and (2) to protect public health and welfare by mitigating the effects of air pollutants on air quality and visibility.
 - **California Clean Air Act (H&S §§ 39660 et seq.):** California adopted the California Clean Air Act (CCAA) in 1988. The Act provides the basis for air quality planning and regulation in California independent of federal regulations, and establishes ambient air quality standards for the same criteria pollutants as the federal clean air legislation.
- San Joaquin Valley Air Pollution Control District. The district is comprised of eight counties that share a common air district: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare Counties. Local air pollution control districts in California develop plans and implement control measures in their areas of jurisdiction. These collectively make up California’s state implementation plan. These controls primarily affect stationary sources but do include sources of dust and smoke. The following district regulations may directly or indirectly affect planning in the Monument:
- **Public Nuisance (Rule 4102):** Prohibits air discharge of material that causes nuisance or annoyance to any considerable number of people.
 - **Prescribed Burning and Hazard Reduction (Rule 4106):** This rule was adopted June 21, 2001, in response to California’s Title 17, and is designed to permit, regulate, and coordinate the use of prescribed burning and hazard reduction burning while minimizing smoke effects on the public.
 - **Fugitive Dust (Regulation 8):** The existing Regulation 8 rules were developed to implement control strategies for major sources of dust. These include construction, demolition, excavation, extraction, handling/storage, landfills, paved/unpaved roads, and open areas. EPA has recently cited deficiencies in these existing rules and the district is evaluating a series of new rules aimed at further reductions in particulates. The San Joaquin Valley Air Pollution Control District (Valley Air District) is responsible for implementing and regulating air quality programs for Fresno County, Tulare County, and a portion of Kern County in the Sequoia National Forest. The Valley Air District regulations can be found at: <http://www.valleyair.org/index.htm>. The Valley Air District has set rules to limit fugitive dust emissions. However, activities conducted at an elevation of 3,000 feet or higher above sea level are exempt. Kern County Air Pollution Control District, which serves eastern Kern County, has set rules for fugitive dust but currently excludes national forests and recreation areas.
 - **Memorandum of understanding between the California Air Resources Board (CARB) and the Forest Service, signed on July 13, 1999:** CARB has set more stringent standards, oversees state and

local actions, and implements programs for toxic air pollutants, heavy-duty trucks, locomotives, ships, aircraft, off-road diesel equipment, and some types of industrial equipment.

- The Smoke Management Guidelines for Agricultural and Prescribed Burning (Title 17) are the regulatory basis for California’s smoke management program. Amendments to California’s Title 17 may directly or indirectly affect planning in the Monument. The smoke management guidelines became effective on March 14, 2001. Local air pollution control districts use these guidelines in local rule development. These guidelines are currently being revised by the CARB.
- General Conformity State Implementation Plan Handbook (1995)

Climate Change

- Environmental Protection Agency (EPA) “State of Knowledge” paper (2007) development
- Climate Change Consideration in Project Level NEPA Analysis, January 13, 2009

Wildlife and Plant Habitat

Wildlife

- Endangered Species Act (ESA): The Endangered Species Act of 1973 (16 USC 1531 et seq.) requires that any action authorized by a federal agency not be likely to jeopardize the continued existence of a threatened or endangered (TE) species or result in the destruction or adverse modification of habitat of such species that is determined to be critical. Section 7 of the ESA, as amended, requires the responsible federal agency to consult the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service concerning TE species under their jurisdiction. It is Forest Service policy to analyze effects to TE species to ensure management activities are not likely to jeopardize the continued existence of a TE species or result in the destruction or adverse modification of habitat of such species that is determined to be critical. This assessment is documented in a biological assessment (BA).

- FSM and FSH, Chapter 2670. Forest Service Sensitive (FSS) species are species identified by the regional forester for which population viability is a concern. The Forest Service develops and implements management practices to ensure that rare plants and animals do not become threatened or endangered and to ensure their continued viability on national forests. It is Forest Service policy to analyze effects to FSS species to ensure management activities do not create a significant trend toward federal listing or loss of viability. This assessment is documented in a biological evaluation (BE).
- The California Condor Recovery Plan (USDI 1996) provides guidelines for management of nest and roost sites. The 1988 Forest Plan designated the Starvation Grove nest area and Lion Ridge roost area, which are within the Monument (USDA Forest Service 1988a pp. 3-29, 4-27 to 4-28).
- Bald and Golden Eagle Protection Act of 1940
- Migratory Bird Treaty Act of 1918
- Valley Elderberry Longhorn Beetle (VELB) Recovery Plan provides habitat management objectives from the U.S. Fish and Wildlife Service (USDI 1993b)

Threatened, Endangered, and Sensitive Species

- Endangered Species Act (ESA): The Endangered Species Act of 1973 (16 USC 1531 et seq.) requires that any action authorized by a federal agency not be likely to jeopardize the continued existence of a threatened or endangered species or result in the destruction or adverse modification of habitat of such species that is determined to be critical. Section 7 of the ESA, as amended, requires the responsible federal agency to consult the USFWS and the National Marine Fisheries Service concerning threatened or endangered species under their jurisdiction.
- Executive Order 13112, Invasive Species 64 FR 6183 (February 8, 1999), to prevent and control the introduction and spread of invasive species
- FSM and FSH, Chapter 2670. Forest Service Sensitive (FSS) species are species identified by the regional forester for which population viability

is a concern. The Forest Service develops and implements management practices to ensure that plants and animals do not become threatened or endangered and to ensure their continued viability on national forests. It is Forest Service policy to analyze effects to sensitive species to ensure management activities do not create a significant trend toward federal listing or loss of viability.

Botanical Resources

- FSM Chapter 2070, Regional Native Plant Policies.

Invasive Nonnative Species

- FSM, Chapter 2081.03 requires that a weed risk assessment be conducted when any ground disturbing activity is proposed. Determines the risk of introducing or spreading noxious weeds associated with the proposed action. Projects having moderate to high risk of introducing or spreading noxious weeds must identify noxious weed control measures that must be undertaken during project implementation.
- Executive Order 13112 of Feb. 3, 1999 directs federal agencies to prevent the introduction of invasive species; detect and respond rapidly to and control such species; not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species unless the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and take all feasible and prudent measures to minimize risk of harm in conjunction with the actions.
- Pacific Southwest Region Noxious Weed Management Strategy
- Sequoia National Forest Weed Management Guidelines
- Continue to participate in and work toward the goals of the California Interagency Coordinating Committee Memorandum of Understanding signed in 1995. Coordinated weed management will take place in the context of regional and local cooperative weed management areas, which allow effective strategy development and cost-sharing in specific areas to solve common weed problems.

Range

- Secretary of Agriculture regulations relating to grazing and livestock on the National Forest System in 36 CFR 222
- Legislative authorities for administration of the National Forest System range program are described in FSM 2201. Objectives, policies, and responsibilities for the range management program are in FSM 2202 through 2204, and FSM 2230.01 through 2230.06. National direction and guidance for grazing permit administration is contained in FSM 2230 through FSM 2238.
- 1997 Rangeland Analysis and Planning Guide

Hydrological Resources

- Organic Act of 1897, Object of Forest Reservations, states that “Public forest reservations are established to protect and improve the forests for the purpose of...insuring conditions favorable to continuous water flow.”
- Clean Water Act of 1948 (as amended in 1972 and 1987) establishes as federal policy the control of point and non-point source pollution and assigns the states the primary responsibility for control of water pollution. Compliance with the Clean Water Act by national forests in California is achieved under state law.
- Non-point source pollution on national forests is managed through the Regional Water Quality Management Plan (USDA 2000), which relies on implementation of prescribed best management practices (BMPs).
- The California Water Code consists of a comprehensive body of law that incorporates all state laws related to water, including water rights, water developments, and water quality. The laws related to water quality (Sections 13000 to 13485) apply to waters in national forests and are directed at protecting the beneficial uses of water.
- The Porter-Cologne Water Quality Act, as amended in 2006, is included in the California Water Code. This act provides for the protection of water quality by the State Water Resources Control Board and the Regional Water Quality Control Boards, which are authorized by the U.S.

Environmental Protection Agency to enforce the Clean Water Act in California.

- Executive Orders 11988 and 11990 (Floodplains and Wetlands) require federal agencies to avoid, to the extent possible, short- and long-term effects resulting from the occupancy and modification of floodplains and the modification or destruction of wetlands. Standards and guidelines are provided for soil, water, wetlands, and riparian areas to minimize effects to floodplains and wetlands. They incorporate the BMPs of the Soil and Water Conservation Handbook. The standards and guidelines apply to all floodplains and wetlands where less restrictive management might otherwise occur.
- Region 5, FSH 2509.22, Chapter 20
- *Sequoia National Forest Cumulative Watershed Effects Field Guide* (Kaplan-Henry and Machado 1991)

Groundwater

- Judicial doctrine and water-rights case law provide the legal interpretations of federal and state statutes about usage and management of groundwater (see FSM 2541.01 and FSH 2509.16 for procedures to be followed for complying with federal policy and state water rights laws).
- The Forest Service national groundwater policy is intended to set out the framework in which groundwater resources are to be managed on NFS lands. As of the publication date of this document, the national policy has not yet been finalized. However, the Technical Guide for Ground Water Resource Management provides a framework for the management of groundwater resources while the national policy is completed.
- Safe Drinking Water Act of 1974, as amended (42 U.S.C. §300f et seq.): The intent of the SDWA is to ensure the safety of drinking water supplies. Its authority is used to establish drinking water standards and to protect surface and groundwater supplies from contamination.
- Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. §6901 et seq.): The Resource Conservation and Recovery Act (RCRA) regulates the generation, transportation, treatment, storage and disposal of waste materials. It has very specific requirements for the protection and monitoring of groundwater and surface water at operating facilities that may generate solid wastes or hazardous wastes.
- Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (42 U.S.C. §9601 et seq.): Also known as “Superfund,” the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) regulates cleanup of existing environmental contamination at non-operating and abandoned sites (see also FSM 2160).
- National Environmental Policy Act of January 1, 1970 (NEPA) (83 Stat. 852 as Amended; 42 U.S.C. 4321, 4331-4335, 4341-4347) (FSM 1950.2): This act directs all agencies of the Federal Government to utilize a systematic interdisciplinary approach which will ensure the integrated use of the natural and social sciences in planning and in decision making which may have an effect on man’s environment. Hydrogeology is one of the applicable sciences.
- Forest and Rangeland Renewable Resources Planning Act of August 17, 1974 (RPA) (88 Stat. 476; 16 U.S.C. 1600-1614) as amended by National Forest Management Act of October 22, 1976 (90 Stat. 2949; 16 U.S.C. 1609) (FSM 1920 and FSM 2550): This act requires consideration of the geologic environment through the identification of hazardous conditions and the prevention of irreversible damages. The Secretary of Agriculture is required, in the development and maintenance of land management plans, to use a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences.
- Federal Water Pollution Control Act of July 9, 1956, as Amended (33 U.S.C. 1151) (FSM 2501.1); Federal Water Pollution Control Act Amendments of 1972 (86 Stat. 816) (FSM 2501.1), and Clean Water Act of 1977 (91 Stat. 1566; 33 U.S.C. 1251) (FSM 2501.1, 7440.1): These acts are intended to enhance the quality and value of the water resource and to establish a national policy for the prevention, control, and abatement of water pollution. Groundwater

information, including that concerning recharge and discharge areas, and information on geologic conditions that affect ground water quality are needed to carry out purposes of these acts.

Geological Resources

- Mining and Minerals Policy Act of December 31, 1970 (84 Stat. 1876; 30 U.S.C. 21a): This act provides for the study and development of methods for the reclamation of mineral waste products and the reclamation of mined lands. This requires an evaluation of geology as it relates to groundwater protection and geologic stability.
- Surface Mining Control and Reclamation Act of August 3, 1977 (SMCRA) (30 U.S.C. 1201, 1202, 1211, 1221–43, 1251–79, 1281, 1291, 1309, 1311–16, 1321–28): This act enables agencies to take action to prevent water pollution from current mining activities and also promote reclamation of mined areas left without adequate reclamation prior to this act.
- Federal Cave Resources Protection Act of 1988 (102 Stat. 4546; 16 U.S.C. 4301 et seq.): This act provides that Federal lands be managed to protect and maintain, to the extent practical, significant caves.
- Wild and Scenic Rivers Act of October 2, 1968 (82 Stat. 906 as Amended; 16 U.S.C. 1271-1287): This act states that it is the policy of the United States that certain selected rivers of the nation which, with their immediate environments, possess outstanding scenic, recreation, geologic, fish and wildlife, cultural, or other similar values shall be preserved in free-flowing condition.

Paleontological Resources

- FSM 2360 pertaining to special interest areas
- Omnibus Public Land Management Act of 2009 (PL 111-011, Title VI, Subtitle D, Section 6300-6312 [16 USC 470aaa-11]) “Paleontological Resources Preservation”: This subtitle provides for the management and protection of paleontological resources on Federal land, including the development of plans for inventory, monitoring, and the scientific and educational use of such resources. It also identifies collection and curation

requirements, prohibited acts and penalties, rewards and forfeitures, and confidentiality.

Soils

- National Soil Management Handbook: The Soil Management Handbook (USDA 1991) is a national soils handbook that defines soil productivity and components of soil productivity, establishes guidance for measuring soil productivity, and establishes thresholds to assist in forest planning.
- Region 5 Soil Management Handbook Supplement (USDA 1991): The Forest Service Region 5 Soil Management Handbook Supplement (R5 FSH Supplement 2509.18-95-1) establishes regional soil quality analysis standards. The analysis standards address three basic elements for the soil resource: (1) soil productivity (including soil loss, porosity; and organic matter); (2) soil hydrologic function; and (3) soil buffering capacity. The analysis standards are to be used for areas dedicated to growing vegetation. They are not applied to lands with other dedicated uses such as developed campgrounds or administrative facilities.
- Regional Forester’s Letter (dated Feb 5, 2007): This letter provided clarification to forest supervisors on the appropriate use of the R5 Soil Management Handbook Supplement (R5 FSH Supplement 2509.18-95-1).

Human Use (Including Recreation, Scenery, and Civil Rights and Environmental Justice)

Recreation

Several authorities guide the provision of recreation opportunities. The FSM provides policy direction, primarily in FSM 2300 for recreation and FSM 2700 for special uses, for both recreation special uses and non-recreation special uses.

The primary management authorities for recreation and related resources are:

- The Term Permit Act of 1915 (38 Stat. 1101, as amended; 16 U.S.C. 497)

- The Multiple Use Sustained-Yield Act of 1960 (74 Stat. 215, as amended; 16 U.S.C. 528-531)
- The Wilderness Act of 1964 (16 U.S.C. 1131-1136)
- The National Historic Preservation Act of 1966 (Pub. L. 89-665; 80 Stat. 915; 16 U.S.C. 470 et seq.)
- The Federal Lands Recreation Enhancement Act, Title VIII, Div. J., of the Consolidated Appropriations Act for 2005, Pub. L. 108-447
- The Architectural Barriers Act of 1968, as amended (42 U.S.C. 4151 et seq.)
- The Rehabilitation Act of 1973, as amended, Sections 504 and 508 (29 U.S.C. 794 and 794d)
- Title V, Section 507c of the Americans with Disabilities Act of 1990 (ADA) (42 U.S.C. 12101 et seq.)
- In addition, the Organic Act of 1897, as amended (FSM 1021.11a), instructs the Secretary of Agriculture to preserve and to regulate occupancy and use of the national forests (16 U.S.C. 473-478, 479-482, 551); prohibitions on the use of National Forest System lands are contained in 36 CFR 261 (FSM 1023.4).

Numerous statutory authorities govern the issuance and administration of special use authorizations on National Forest System lands. Some of those laws are:

- The Organic Administration Act of 1897 (16 U.S.C. 477-482, 551)
- The Act of March 4, 1915, as amended in 1956 (16 U.S.C. 497), which authorizes term permits
- Section 7 of the Granger-Thye Act of 1950 (16 U.S.C. 490, 504, 504a, 555, 557, 571c, 572, 579a, 580c-5801, 581i-1)
- The Independent Offices Appropriation Act of 1952, as amended (31 U.S.C. 9701) (Office of Management and Budget Circular No. A-25 further defines this authority)
- The Wilderness Act of 1964 (16 U.S.C. 1131-1136)
- The Land and Water Conservation Fund Act of 1964, as amended (16 U.S.C. 4601-6a(c))
- The National Forest Roads and Trails Act of 1964 (16 U.S.C. 532-38)
- Title V of the Federal Land Policy and Management Act of 1976 (43 U.S.C. 1761-1771)
- The Alaska National Interest Lands Conservation Act of 1980 (16 U.S.C. 3210)
- The National Forest Ski Area Permit Act of 1986 (16 U.S.C. 497b)
- The Omnibus Parks and Public Lands Management Act of 1996 (16 U.S.C. 497c)
- The Act of May 26, 2000 (16 U.S.C. 4061-6d), which supplements the authority to regulate commercial filming and still photography
- The Cabin User Fee Fairness Act of 2000 (16 U.S.C. 6201-6213)
- The National Forest Organizational Camp Fee Improvement Act of 2003 (16 U.S.C. 6231 et seq.).
- Special use regulations are in 36 CFR 251.

Scenery

- Agriculture Handbook 434:1973, National Forest Landscape Management, Volume 1
- Agriculture Handbook 701:1995, Landscape Aesthetics, A Handbook for Scenery Management
- *Built Environment Image Guide* (BEIG): The built environment, as used in this guide, refers to the administrative and recreation buildings, landscape structures, site furnishings, structures on roads and trails, and signs installed or operated by the U.S. Department of Agriculture (USDA) Forest Service, its cooperators, and permittees.

The elements of the built environment constructed on national forest lands and grasslands, or those used for administrative purposes in rural areas, towns, and cities, shall—to the extent practicable—incorporate the principles of sustainability, reflect their place within the natural and cultural landscape, and provide optimal service to our customers and cooperators. These elements will:

- Be located, planned, and designed with respect for the natural systems in which they reside.

- Aesthetically integrate their natural, cultural, and experiential context.
- Contain design elements, including appropriate signs, that reinforce a national agency identity.
- Emphasize efficiency of energy and materials consumption in construction and operation.
- Serve as premier examples to interpret conservation of natural resources and sustainable development.
- Create environments for people to enjoy and gain increased appreciation for the natural environment, and in which employees work productively, experiencing the connection to the resources they manage.

Civil Rights and Environmental Justice

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d-2000d-7; Sec. 2000d): Prohibition against exclusion from participation in, denial of benefits of, and discrimination under federally assisted programs on grounds of race, color, or national origin.
- Civil Rights Impact Analysis (CRIA) (FSM 1730.3)
- The Civil Rights Policy for USDA, Departmental Regulation 4300-4 dated May 30, 2003 (7 CFR 15d)
- Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations: Requires each federal agency to make achieving environmental justice part of its mission.
- Departmental Regulation (DR) 5600-2: Provides direction to agencies for integrating environmental justice considerations into USDA programs and activities, in compliance with EO 12898.

Socioeconomics

- Social Impact Analysis (1900-03)
- Healthy Forest Restoration Act (HFRA), (Section 303 of Public Law 108-148, December 3, 2003).
- Energy Act of 2008 (Public Law 110-234).

- Department of Agriculture Departmental Regulation 1350-001, September 11, 2008.
- Departmental Regulation 1340-007, March 14, 2008.

Cultural Resources/Tribal and Native American Interests

- Organic Act of 1897 (Title 16, United States Code (U.S.C.), section 473-478, 479-482, 551)
- Antiquities Act of 1906 (16 U.S.C. 431) In so doing, the USDA Forest Service built environment will strengthen and reinforce the image of the agency as an international conservation leader.
- Native American Graves Protection and Repatriation Act (NAGPRA) of 1990
- Historic Sites Act of 1935 (16 U.S.C. 461)
- National Historic Preservation Act of 1966 (NHPA), as amended (16 U.S.C. 470), and its implementing regulation 36 CFR 800
- Archaeological and Historic Preservation Act of 1974 (AHPA) (16 U.S.C. 469)
- Archaeological Resources Protection Act of 1979 (ARPA), as amended (16 U.S.C. 470aa et seq.), as implemented by 36 CFR part 296
- Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), as amended (25 U.S.C. 3001), as implemented by 43 CFR Part 10, Subpart B – Human Remains, Funerary Objects, Sacred Objects, or Objects of Cultural Patrimony From Federal or Tribal Lands
- Curation of Federally-owned and Administered Archaeological Collections, 36 CFR part 79
- National Indian Forest Resources Management Act (NIFRMA), Public Law 101-630, November 28, 1990
- American Indian Religious Freedom Act (AIRFA) (Public Law 103-344, October 6, 1994)
- Tribal Forest Protection Act of 2004 (Public Law 108-278, July 22, 2004)

- Executive Order 11593, Protection and Enhancement of the Cultural Environment, issued May 13, 1971
- Executive Order 13007, Indian Sacred Sites, issued May 24, 1996
- Executive Order 13175, Consultation and Coordination with Indian Tribal Governments, issued November 6, 2000
- Executive Order 13287, Preserve America, issued March 3, 2003
- *The First Amended Regional Programmatic Agreement Among the U.S.D.A. Forest Service, Pacific Southwest Region, California State Historic Preservation Officer, and Advisory Council on Historic Preservation Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Undertakings on the National Forests of the Pacific Southwest Region* (2001)
- *The Programmatic Agreement Among the U.S.D.A. Forest Service, Pacific Southwest Region, California State Historic Preservation Officer, and Advisory Council on Historic Preservation Regarding the Identification, Evaluation and Treatment of Historic Properties managed by the National Forests of the Sierra Nevada, California* (1996)
- Other regional programmatic agreements for individual historic property types, including lookouts, administrative buildings, and recreation residences, and specific undertaking types of fuel reduction and range; and subsequently issued programmatic agreements
- FSM 2300, Chapter 2360, Heritage Program Management
- FSM 1500, External Relations, Chapter 1560—State Tribal, County, and Local Agencies, Public and Private Organizations (2007)
- FSH 1509.13, American Indian and Alaska Native Relations Handbook
- Executive Memo, April 29, 1994, “Government-to-Government Relationship.”
- Executive Memo, September 23, 2004, “Government-to-Government Relationship.”

Transportation

- Highway Safety Act of 1966: The Department of Transportation is authorized and directed to assist and cooperate with other federal departments and agencies, state and local governments, private industry, and other interested parties to increase highway safety. Each state is responsible for implementing a highway safety program to reduce traffic accidents and deaths, injuries, and property damage.
- Title 36, Code of Federal Regulations, Part 212 (36 CFR 212): The implementing regulation for the National Forest Roads and Trails Act (FRTA) includes portions of the Travel Management Rule published in the Federal Register on November 9, 2005. Part 212, Subpart B, provides criteria for designation of roads and trails. Providing safe transportation facilities and considering the affordability of maintaining the transportation facilities are two of the criteria.
- The California Vehicle Code (CVC): The CVC contains regulations related to the use of motor vehicles in California, including motor vehicles used on the national forests. The CVC sets safety standards for motor vehicles and vehicle operators. It defines the safety equipment needed for highway legal and non-highway legal vehicles. The code also defines the roads and trails where non-highway legal motor vehicles may be operated.
- FSM sections 2350 and 7700 contain agency policy for management of the National Forest Transportation System (NFTS). FSH 7709.59 describes the maintenance management system the Forest Service uses and the maintenance standards needed to meet road management objectives (RMOs). FSH 2309.18 describes the maintenance management system the Forest Service uses and the maintenance standards needed to meet trail management objectives (TMOs).

Special Forest Products

- USDA Forest Service, 36 CFR Parts 223 and 261, Sale and Disposal of National Forest Products and Forest Botanical Products
- Federal Register/Vol. 73, No. 249/December 29, 2008/Rules and Regulations (FR 2008)

Clear Need Criteria/Standards and Guidelines

Ecological Restoration

These giant sequoia groves and the surrounding forest provide an excellent opportunity to understand the consequences of different approaches to forest restoration. These forests need restoration to counteract the effects of a century of fire suppression and logging. Fire suppression has caused forests to become denser in many areas, with increased dominance of shade-tolerant species. Woody debris has accumulated, causing an unprecedented buildup of surface fuels. One of the most immediate consequences of these changes is an increased hazard of wildfires of a severity that was rarely encountered in pre-Euroamerican times. Outstanding opportunities exist for studying the consequences of different approaches to mitigating these conditions and restoring natural forest resilience (Clinton 2000, pp. 24095-24096).

The Proclamation recommended managing the Monument for ecological restoration and maintenance of those restored conditions, but did not define the term. The Forest Service definition for ecological restoration can be found in the Forest Service Manual, Chapter 2020, Ecological Restoration and Resilience (FSM 2000, Sept. 22, 2008), which defines it as:

The process of assisting the recovery of resilience and adaptive capacity of ecosystems that have been degraded, damaged, or destroyed. Restoration focuses on establishing the composition, structure, pattern, and ecological processes necessary to make terrestrial and aquatic ecosystems sustainable, resilient, and healthy under current and future conditions.

In addition, the Pacific Southwest Region of the Forest Service has published a Region 5 Ecological Restoration Leadership Intent that states:

Our goal for the Pacific Southwest Region is to retain and restore ecological resilience of the National Forest lands to achieve sustainable ecosystems that provide a broad range of services to humans and other organisms. Ecologically healthy and resilient landscapes, rich in biodiversity, will have greater capacity to adapt and thrive in the face of natural disturbances and large scale threats

to sustainability, especially under changing and uncertain future environmental conditions such as those driven by climate change and increasing human use (USDA 2011).

The Proclamation provides the context in which to use ecological restoration and maintenance for protecting and caring for the objects of interest. The Monument is located in a Mediterranean climate where species are adapted to frequent disturbances, usually due to wildfire. Ecological restoration in the Monument is likely to be strongly correlated to fuel treatments in the wildland urban intermix (WUI). However, focusing solely on burning to achieve ecological restoration would not address state air quality requirements or the need to achieve and maintain resiliency and heterogeneity. Advisory IV, Restoration of the Natural Fire Regime, from the Scientific Advisory Board, questions whether fire alone can be used to reach the desired conditions for giant sequoia groves and their ecosystems:

Fire often is a useful tool for restoring giant sequoia groves and other fire-adapted ecosystems (Hardy and Arno 1996; Stephenson 1996, 1999). However, issues such as human safety, air quality, water quality, endangered species, cumulative impacts with other management actions, current and desired forest structure, and current fuel loads mean that fire alone cannot always be used to achieve desired forest conditions (Weatherspoon 1996; Fulé et al. 1997; Piirto and Rogers 1999). In areas where fire alone cannot be used to achieve desired conditions, mechanical thinning often proves to be a useful alternative (Weatherspoon 1996) (The Scientific Advisory Board 2003).

And Advisory IX, Undesirable Fire Effects, from the Scientific Advisory Board states:

Fuels reduction strategies in the Sierra Nevada Forest Plan Amendment [2001 SNFPA] may not adequately protect the giant sequoias and mixed conifer ecosystem from catastrophic fire... One of the goals stated in the Monument Proclamation is to restore “natural forest resilience” (Clinton 2000). Some foresters, forest ecologists, and others believe that in some areas of the Monument, the standards

set forth in the Forest Plan Amendment may be too restrictive to meet this goal with regard to catastrophic wildfire, and to protect other objects of interest in the Monument (The Scientific Advisory Board 2003).

As a result, restoration and maintenance activities will likely involve the use of both fire and mechanical treatments to reduce fuels and manage vegetation to protect the objects of interest, to accomplish critical restoration objectives, and to improve resilience in this fire-adapted ecosystem. Ecological integrity will

Table 46 Management Direction for Ecological Restoration

Land Allocation/Species	Focus	Diameter Limit (inches)
General Monument ⁽¹⁾	Protection ⁽²⁾ Resiliency ⁽³⁾ Heterogeneity ⁽⁴⁾	20 (conifers) 12 (hardwoods)
Old forest emphasis	Protection Resiliency Heterogeneity	20
Northern goshawk and California spotted owl PACs: inside defense zones	Protection Resiliency	6 (within 1-2 acres of nest tree) 20 (elsewhere) ⁽⁵⁾
Northern goshawk and California spotted owl PACs: outside defense zones, inside threat zones or TFETA	Protection Resiliency	6 (within 1-2 acres of nest tree) ⁽⁶⁾
Carnivore den sites: inside defense zones	Protection	20 ⁽⁷⁾
Carnivore den sites: outside defense zones	Protection	Avoid ⁽⁸⁾
Wildland urban intermix (WUI): defense zone	Protection Public safety Resiliency	20
Giant sequoias outside WUI	Protection Resiliency	12
Giant sequoias inside WUI defense zone	Protection Resiliency Giant sequoia regeneration	12
Giant sequoias inside WUI threat zone	Protection Resiliency Giant sequoia regeneration	12
Tribal Fuels Emphasis Treatment Area (TFETA)	Protection Public safety Resiliency	20

1. Outside of other allocations.
2. Protection of objects of interest.
3. Promotion of resiliency.
4. Promotion of heterogeneity.
5. For northern goshawk and California spotted owl PACs within defense zones, mechanical treatments would be prohibited within 500 feet of nest trees. Prescribed burning would be allowed within the 500-foot buffer. Prior to burning, hand treatments could be conducted, including the felling of small trees, within the 1-2 acre area surrounding nest trees. The rest of the PAC could be mechanically treated, with a 20-inch diameter limit, to achieve fuels reduction goals.
6. In northern goshawk and California spotted owl PACs outside of defense zones, fuel treatments would be limited to prescribed fire. Prior to burning, hand thinning of trees less than 6 inches in diameter would be permitted within the 1-2 acre area surrounding nest trees. These restrictions would also apply where a goshawk or spotted owl PAC overlaps with WUI threat zone or the TFETA.
7. Inside defense zones, if necessary to achieve fuels objectives, mechanical treatments of ladder and surface fuels over 85 percent of the treatment area would be permitted, with a 20-inch diameter limit. Prescribed fire could be used if there is no other reasonable treatment method.
8. Fuel treatments within carnivore dens site buffers that are outside of defense zones would be avoided.

be maintained, making use of the same management tools, to keep landscapes ecologically healthy and resilient.

Types of Treatments

Two types of treatment are considered for ecological restoration in the Monument: fire (prescribed fire, managed wildfire, and the hand treatments that accompany them, including chainsaws) and mechanical (self-propelled ground-based machines). Site-specific project analysis will determine the scope and percentage of fire and mechanical treatments necessary to restore and maintain ecosystems, provide for public safety, and meet the desired conditions for the Monument.

There are two types of wildland fires: wildfires and prescribed fires. Prescribed fires are planned and used for ecological restoration following site-specific project analysis. Wildfires are caused by natural ignitions, such as lightning, or some type of human interaction. The term “managed wildfire” refers to the use of wildfires started by natural ignitions to protect, maintain, and enhance resources, and, whenever possible, allow fire to function in its natural ecological role. This is one tool used to restore and maintain the natural fire regime. Human-caused wildfires will continue to be suppressed, and not managed for resource benefits.

Unplanned natural ignitions will be evaluated on a case-by-case basis at the project level to determine if the fire should be allowed to burn. Managed wildfires would use strategies and tactics which provide for the protection of human health, safety, and natural and cultural resource values. Risks and complexities for all ignitions would be analyzed in order to determine those ignitions which could be successfully managed for ecological benefit. Managed wildfire can be used as a tool to reintroduce fire to the ecosystem, reduce unnatural fuel accumulations, and promote resilient forest structures under appropriate conditions (Fites-Kaufman 2005).

Throughout the Monument, even in WUI zones and the Tribal Fuels Emphasis Treatment Area (TFETA), mechanical treatments will be limited or prohibited:

- in wilderness (existing and proposed)
- in wild and scenic river corridors

- in inventoried roadless areas
- in research natural areas
- in riparian conservation areas
- on slopes exceeding 35 percent
- in areas greater than 9,000 feet in elevation
- in areas more than ¼ mile from a road

Based on these constraints, approximately 23 percent of the 328,315 acres of National Forest System land in the Monument could be considered for mechanical treatments (alone or in conjunction with fire treatments), compared to about 77 percent that could be considered for fire treatments.

Removal of Trees from Within the Monument

Any treatments that involve the removal of trees from within the Monument area, including both standing trees and downed logs, will only be permitted following a determination that removal of the trees is “clearly needed for ecological restoration and maintenance or public safety” (Clinton 2000, p. 24097).

Removal of trees, except for personal use fuel wood, from within the monument area may take place only if clearly needed for ecological restoration and maintenance or public safety (Clinton 2000, p. 24097).

In July 2008, the Forest Service provided a public comment period for reviewing the advisories from the Scientific Advisory Board and key terms used in the Proclamation. These comments were summarized in a report and then used to prepare an interpretation by the Forest Supervisor of the key principles of the Proclamation (Terrell 2009). The Forest Service interpretation includes this discussion on tree removal:

Tree Removal: Trees may only be removed if clearly needed for ecological restoration and maintenance or public safety. I have reviewed the comments received on the term “removal,” in the particular context of “tree removal” as stated in the Proclamation, to determine which definition to use for resource management in the Monument. I agree that “tree removal” is defined as “to take away or off of the Monument.”

ej cpi gu'ku'cp'kpetgcugf "j c| ctf "qh'y kf hktgu'qh'c
ugxgtk{ "vj cv'was rarely encountered in pre-
Euroamerican times"(Clinton 2000, p. 24095).

F2. Regeneration: If maintaining one or more standing trees on a site would adversely affect the regeneration, longevity, or growth of giant sequoias and other desired species.

...a century of fire suppression has led to an unprecedented failure in sequoia reproduction in otherwise undisturbed groves (Clinton 2000, p. 24095).

F3. Heterogeneity: If maintaining one or more standing trees on a site would adversely affect the desired diversity or structure of a stand or forest.

Sequoias and their surrounding ecosystems provide a context for understanding ongoing environmental changes (Clinton 2000, p. 24095).

F4. Public Safety: If maintaining one or more standing trees on site would create a public safety hazard. Forest Service policy is to mitigate safety hazards from recreation sites, administrative sites, and the public transportation system of roads and trails, including trees or tree limbs identified as hazardous (FSM 2332).

F5. Recreation and Administrative Sites: Other projects that may be proposed in the Monument that could require tree felling include recreation or administrative site development and maintenance, scenic vistas, and road access and parking for these sites. These activities would meet the intent of the Proclamation, which provides the following:

The plan will provide for and encourage continued public and recreational access and use consistent with the purposes of the monument (Clinton 2000, p. 24097).

The management plan shall contain a transportation plan for the monument that provides for visitor enjoyment and understanding about the scientific and historic objects in the monument, consistent with their protection. For the purposes of protecting the objects included in the monument, motorized vehicle use will be permitted only on designated roads, and non-motorized mechanized vehicle use will be permitted only on designated roads and trails, except for emergency or authorized administrative

purposes or to provide access for persons with disabilities. No new roads or trails will be authorized within the monument except to further the purposes of the monument (Clinton 2000, p. 24098).

Decision Tree

Advisory IV, Restoration of the Natural Fire Regime, and Advisory XXVIII, Decision Tree, from the Scientific Advisory Board, advise that a decision tree be developed to help determine which methods of forest restoration and maintenance should apply at different locations (The Scientific Advisory Board 2003).

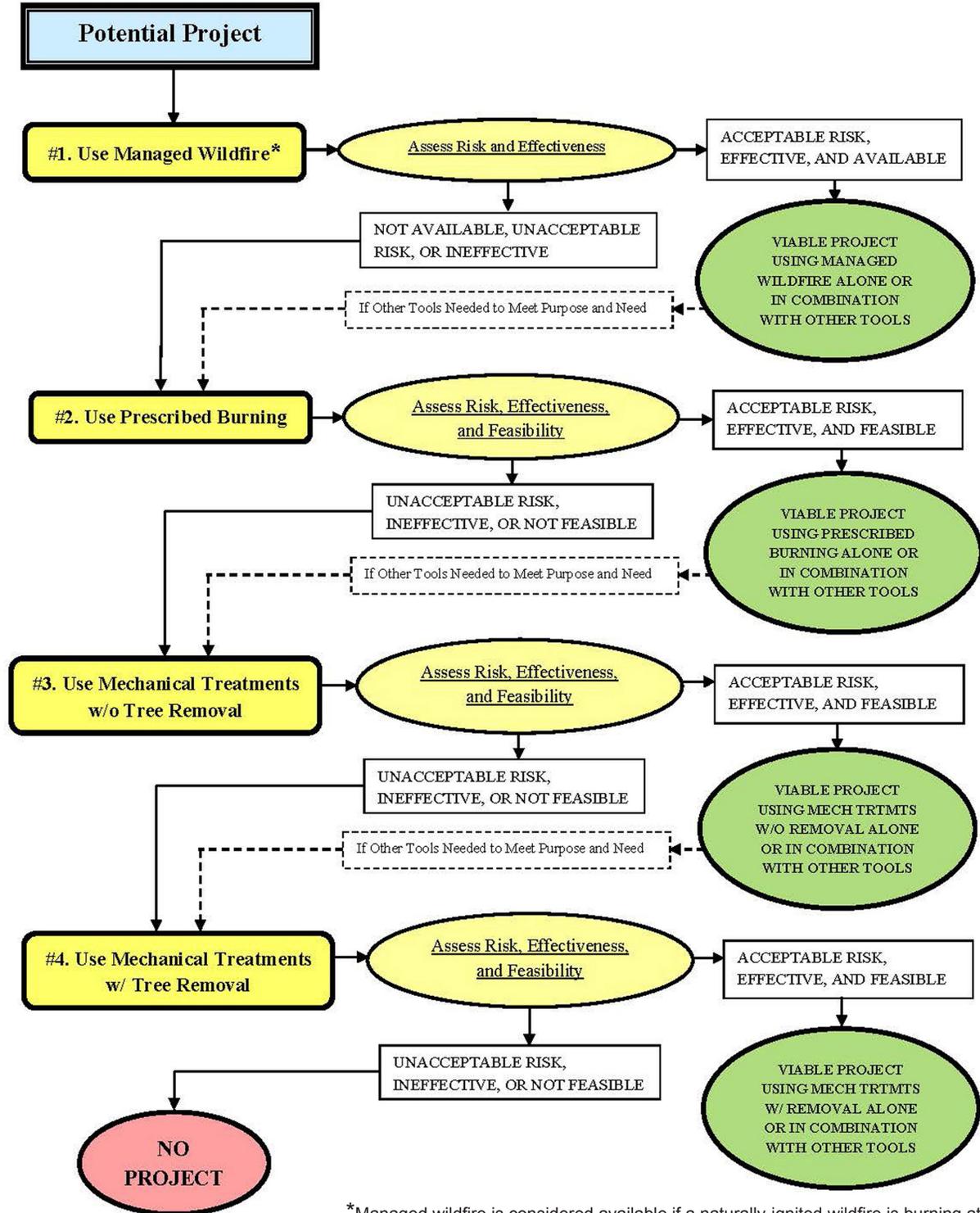
This decision tree (shown on the following page) will be used for each site-specific project proposed in the Monument. The desire to return the Monument to natural cycles and processes, including a natural fire interval, makes managed wildfire the preferred tool to accomplish ecological restoration and maintenance (as shown in Box #1). As the decision tree shows, the risks, feasibility, and effectiveness of using managed wildfire will be assessed to determine if it would meet ecological objectives and help protect the objects of interest. The evaluation will consider combining managed wildfire (when available) with other management tools to meet the purpose and need for the project. The availability of managed wildfire is difficult to anticipate. Managed wildfire is considered available if a naturally-ignited wildfire is burning at the desired time to initiate a project, or during project planning or implementation. If managed wildfire is available, the risks and effectiveness of using it will be weighed using the Wildland Fire Decision Support System (WFDSS), or subsequent systems developed for this purpose. If managed wildfire is not available, or needs to be used in combination with other treatments, the use of prescribed fire will be evaluated (as shown in Box #2).

A risk assessment will be conducted of local conditions such as slope, fuel loadings, and proximity to communities, giant sequoia groves, fisher den sites, and nest trees. The effectiveness of using prescribed fire will be evaluated to determine if the prescribed fire treatment will meet ecological objectives and help protect the objects of interest. Factors such as the availability of personnel and favorable burn days will help determine the feasibility of the treatment.

The evaluation will consider combining prescribed burning with other management tools to meet the purpose and need for the project. If the use of prescribed fire would create unacceptable risk to the

objects of interest, to forest users, or to communities; or would not meet ecological restoration objectives; or would not be feasible; or needs to be used in combination with other treatments, the use of

Figure 4 Decision Tree for Site-Specific Projects in the Monument



*Managed wildfire is considered available if a naturally-ignited wildfire is burning at the desired time to initiate a project, or during project planning or implementation.

mechanical treatment without tree removal will be assessed (as shown in Box #3). The use of mechanical treatment without tree removal will be assessed in a manner similar to the use of managed wildfire and prescribed fire, to determine if it would reduce risk and improve effectiveness and/or feasibility. The evaluation will consider combining mechanical treatments with other management tools to meet the purpose and need for the project.

Mechanical treatment with tree removal (Box #4) will only be considered if other methods do not meet ecological objectives in the project purpose and need. Additional analyses of the risks and hazards of leaving the trees in the Monument, the effectiveness of the treatment, and feasibility must show that mechanical treatment with tree removal is clearly needed to reduce the risk to acceptable levels, make the project effective in meeting restoration and protection objectives, and make it feasible. Only by meeting these criteria, would tree removal be used as part of a viable project.

It is possible that projects will plan to use a combination of management tools. For example, managed wildfire may be acceptable under certain conditions, but not others. Where it is acceptable,

it may be appropriate to plan for either managed wildfire or prescribed burning as the method to meet project objectives. Some projects may include a combination of fire and mechanical treatments. For example, in areas with heavy fuel accumulations, mechanical treatments could be used before fire is introduced to reduce risks and increase the effectiveness of prescribed burning or managed wildfire.

Standards and Guidelines

Standards and guidelines are requirements that preclude or impose limitations on resource management activities and are designed to be consistent with the objectives and desired conditions; they come into play as site-specific activities are planned to implement the Monument Plan. The standards and guidelines act as thresholds or constraints for management activities or practices to ensure the protection of resources. They may apply to the entire Monument or they may only apply to certain land allocations. The following standards and guidelines for the Monument are organized by resource area.

Standard/Guideline
Vegetation, including Giant Sequoias
<i>Monument-wide⁽¹⁾</i>
1. For all projects that include a proposal for tree removal from within the Monument, except for personal use fuelwood, conduct an evaluation to document the clear need for removing trees for ecological restoration and maintenance or public safety.
2. When implementing vegetation and fuels treatments, retain all conifer trees with a dbh of 20 inches or greater in westside forest types. 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 fire prescriptions and techniques to minimize the loss of large trees and large down material.
3. Incidental removal of trees that present safety hazards may deviate from vegetation management standards and guidelines.
4. 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.
5. Plant all regeneration areas requiring reforestation except where natural seeding is prescribed. Regeneration by natural seeding will be applied primarily in the true fir type.
6. Both natural and artificial regeneration shall be used as appropriate.

1. These standards and guidelines apply across all land allocations/management areas in the Monument (other than Wilderness and Wild and Scenic Rivers).

Standard/Guideline
7. Save viable existing reproduction where feasible and incorporate into silvicultural prescriptions for new stands.
8. Utilize current state-of-the-art regeneration techniques including controlling pests, such as gophers, and controlling competing vegetation.
9. Make dead and down woody material available for firewood gathering.
10. In order to maintain forest diversity, particularly within the mixed conifer forest type, reforestation and timber stand improvement prescriptions shall generally emulate desired species composition. Variation from this guideline will be the exception and will be discussed in an environmental document.
11. Design vegetation treatments to provide for edge corridors of cover and enhancement of special habitat features such as meadows for wildlife.
<i>Giant Sequoia Groves⁽²⁾</i>
12. Protect and manage giant sequoias to perpetuate the species and preserve old growth specimen trees.
13. Any naturally-occurring giant sequoia (1 foot or larger dbh) which is located within 500 feet of at least 3 other giant sequoias (each 1 foot or larger dbh), shall always be included within the hypothetical perimeter line (of the grove).
14. Refine the lower boundary of the zone of influence (ZOI) as necessary for groves adjacent to, included in, or in any way affected by proposed site-specific projects, to protect the giant sequoia groves and their associated ecosystems. Survey stream channels where downstream riparian ecotype is unknown, assign the downstream ecotype(s), identify the nearest stable stream channel below the grove, and refine the ZOI based on this new information (North et al 2002).
15. Several adjacent groves are to be managed as if they were one large grove, the hypothetical perimeter line, as defined, shall be a single line around the outermost giant sequoia trees in the complex of groves, taken as a whole.
16. Restrict mechanical entry and vegetation management within grove administrative boundaries. The following mechanical/motorized uses will be permitted within the grove boundary line: <ul style="list-style-type: none"> a. Use of existing roads, b. Management in accordance with approved fuel load reduction plans, where clearly needed for ecological restoration and maintenance or public safety, c. Use of light equipment to build and/or maintain trails, d. Expansion of parking areas for trailheads, e. Use of equipment to fight wildfires (use of heavy equipment off of existing roads will require Forest Supervisor approval), and f. Use of battery-operated wheelchairs. In Indian Basin Grove, there will be no felling of trees except for safety reasons in and near the Princess Campground area south and east of Highway 180.
17. Protect the named sequoias (such as the Boole Tree) from wildfires and fuels reduction activities. Protect these trees by pulling fuels away from the base of the tree or removing ladder fuels that can promote a crown fire in the named sequoia.
18. Manage the Freeman Creek Grove Management Area as a Botanical Area.
<i>Sugar Pine</i>
19. Silvicultural prescriptions are to consider means of maintaining the widest possible base of sugar pine genes. Generally, this means protecting as many sugar pine trees as possible while meeting land management plan objectives.

2. Using the ZOI grove allocation boundary.

Standard/Guideline
20. Continue to plant a modest mix (5-10 percent) of sugar pine along with other mixed conifer species. This may mean collecting seed from non-tested trees in order to maintain a sugar pine seedbank. With resistant stock this percentage could be increased.
21. Intensify the effort to collect sample cones from candidate resistant trees. This is a high priority.
22. Continue to protect trees that are known to carry resistance. Collect seed from these trees for our seedbank.
<i>Young Stands, Including Plantations</i>
23. In young stands of trees, apply the necessary silvicultural and fuels reduction treatments to: (a) accelerate the development of old forest characteristics, (b) increase stand heterogeneity, (c) promote hardwoods, and (d) 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: (a) wildland fire would burn with average flame lengths of 2 to 4 feet, (b) the rate of fire spread would be less than 50 percent of the pre-treatment rate of spread, and (c) fireline 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.
<i>Hardwood Ecosystems</i>
24. During or prior to landscape analysis, spatially determine distributions of existing and potential natural hardwood ecosystems (Forest Service Handbook 2090.11). Identify hardwood restoration and enhancement projects.
25. Manage hardwood ecosystems for a diversity of hardwood tree size classes such that seedlings, saplings, and pole-sized trees are sufficiently abundant to replace large trees that die and maintain mast production.
26. Where possible, create openings around existing California black oaks and canyon live oaks to stimulate natural regeneration.
27. Retain the mix of mast-producing species where they exist within a stand.
28. Retain all blue oak and valley oak trees except where: (a) stand restoration strategies call for tree removal; (b) trees are lost to fire; or (c) tree removal is needed for public health and safety.
29. When planning prescribed fire or mechanical treatments in hardwood ecosystems: (a) consider the risk of noxious weed spread and (b) minimize effects to hardwood ecosystem structure and biodiversity.
<i>Fire and Fuels</i>
<i>Monument-wide</i>
1. Use the most recent inventories of fuel load to develop a fuel load reduction plan for each giant sequoia grove (within its administrative boundaries).
2. 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.
3. Limit the structural change to treatment acres by mechanical methods 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.
4. Use lightning-caused fires to reduce fuel loads or to provide other resource benefits, such as conserving populations of fire-dependent species.
5. 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.
6. When planning prescribed fire or mechanical treatments in hardwood ecosystems: (a) consider the risk of noxious weed spread and (b) minimize effects to hardwood ecosystem structure and biodiversity.
7. Design 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: (a) wildland fires would burn with an

Standard/Guideline
average flame length of 8 feet or less; (b) the fire’s rate of spread would be less than 50 percent of the pre-treatment rate of spread; and (c) fireline production rates would be doubled. Treatments should be effective for more than 5 years.
<i>Old Forest Emphasis Area</i>
8. Design mechanical fuel treatments to remove the material necessary to achieve the following outcomes: <ul style="list-style-type: none"> ● On over 75 percent of the stand area achieve an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions. ● Stands with less than 40 percent canopy cover, achieve an average live crown base height of 15 feet. ● Stands with 40 to 70 percent canopy cover, achieve an average live crown base height of 20 feet. ● Stands with greater than 70 percent canopy cover, achieve an average live crown base height of 25 feet. <p>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.</p>
9. Where mechanical treatments are necessary, design treatments to achieve or approach the fuels outcomes described above by reducing surface and ladder fuels. 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.
10. 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.)
11. 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.
12. 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.
13. Emphasize fuel treatments in stands at lower elevations with high fire hazard in the pine and 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: (a) prescribed fire escape due to excessive fuel accumulations; (b) unacceptable smoke effects; or (c) canopy cover and old forest structure loss due to excessive surface and ladder fuels.
<i>Wilderness</i>
14. In wilderness, use naturally ignited wildfires to meet management strategies when fuel loading and natural barriers will limit the final fire perimeter to a planned boundary under the most severe weather conditions.
<i>WUI Defense Zone</i>
15. Design mechanical fuel treatments to remove the material necessary to achieve the following outcomes: (a) On more than 90 percent of the stand area, achieve an average flame length of 4 feet or less if the stand was to burn under 90th percentile fire weather conditions; (b) On stands with less than 40 percent canopy cover, achieve an average live crown base height of 15 feet; 40 to 70 percent canopy cover, achieve an average live crown base height of 20 feet; and greater than 70 percent canopy cover, achieve an average live crown base height of 25 feet.
16. To enhance stand heterogeneity, do not mechanically treat the remaining 10 percent of the stand area.

Standard/Guideline
17. Achieve the fuels outcomes described above through thinning from below to remove surface and ladder fuels.
WUI Threat Zone
18. Design mechanical fuel treatments to remove the material necessary to achieve the following outcomes: (a) On more than 85 percent of the stand area, achieve an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions; (b) On stands with less than 40 percent canopy cover, achieve an average live crown base height of 15 feet; 40 to 70 percent canopy cover, achieve an average live crown base height of 20 feet; and greater than 70 percent canopy cover, achieve an average live crown base height of 25 feet.
19. To enhance stand heterogeneity, do not mechanically treat the remaining 15 percent of the stand area.
20. 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-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.
21. 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.
22. 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.
General Monument⁽³⁾
23. Design mechanical fuel treatments to remove the material necessary to achieve the following outcomes: (a) On more than 75 percent of the stand area, achieve an average flame length of 6 feet or less if the stand was to burn under 90th percentile fire weather conditions; (b) On stands with less than 40 percent canopy cover, achieve an average live crown base height of 15 feet; 40 to 70 percent canopy cover, achieve an average live crown base height of 20 feet; and greater than 70 percent canopy cover, achieve an average live crown base height of 25 feet.
24. To enhance stand heterogeneity, do not mechanically treat the remaining 25 percent of the stand area.
25. Design mechanical treatments to achieve the fuels outcomes described above through understory thinning to remove surface and ladder fuels up to 20 inches in diameter. Focus treatments on removing suppressed and intermediate conifer trees.
Air Quality
Monument-wide
1. Continue the visibility monitoring program and determine sensitive indicators for each air quality-related value in national forest class I areas. Protect air quality-related values by reviewing all projects and management activities that may affect those values. Review external prevention of significant deterioration (PSD) source applications and make recommendations to permitting authorities.
2. Minimize resource and air quality effects from air pollutants generated by management activities through use of the following control measures: <ul style="list-style-type: none"> a. Follow dust abatement procedures. b. Conduct an air quality analysis for all projects that may impair air quality to determine effects, mitigations, and/or controls.

3. The 2001 SNFPA called this land allocation General Forest. For the Monument, it is called General Monument and includes any area in the Monument that is outside of other allocations.

Standard/Guideline
<p>c. Respond to local planning and regulatory authorities when development outside forest jurisdiction may affect forest resources.</p> <p>d. Conduct prescribed burning activities in accordance with air pollution control district regulations and with proper prescriptions to assure good smoke management.</p> <p>e. Notify the public before burning.</p>
<p>3. Minimize smoke emissions by following best available control measures (BACMs). Avoid burning on high visitor days. Notify the public before burning.</p>
<p>4. 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.</p>
Wildlife and Plant Habitat⁽⁴⁾
Wildlife Habitat
<i>Monument-wide</i>
<p>1. Fell and/or remove snags as needed to address imminent safety hazards.</p> <p>2. Manage snag levels for ecological restoration. Within green forests, design projects to provide a sustainable population of medium- and large-diameter snags. Existing medium- and large-diameter snags, as well as medium- and large-diameter living trees that exhibit form and/or decay characteristics regarded as important wildlife habitat (e.g., have substantial wood defect, teakettle branches, broken tops, large cavities in the bole, etc.), will form the backbone snag network over large landscapes.</p> <p>In areas burned by wildfire, including high- and mid-severity patches, manage snag levels to meet ecological restoration objectives, with consideration for the spatial arrangement and density of snags for wildlife needs. Include site-specific considerations such as a wider range of snag sizes and densities, and focal placement of snags and snag patches.</p>
<p>3. 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 in diameter.</p>
<p>4. Upon 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 effect from January 1 to June 30.</p>
<p>5. 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.</p>
<p>6. 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: stands with an average tree size of 11 inches dbh or greater and at least 40 percent canopy cover.</p>
<p>7. Conduct additional surveys to established protocols to follow up reliable sightings of great gray owls.</p>
<i>Old Forest Emphasis Area</i>
<p>8. Minimize old forest habitat fragmentation. Assess potential effects of fragmentation on old forest associated species (particularly fisher and marten) in biological evaluations.</p>
<p>9. Assess the potential effects of projects on the connectivity of habitat for old forest associated species.</p>
<p>10. 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.</p>

4. Including Threatened, Endangered, and Sensitive Species; Management Indicator Species; Botanical Resources; and Invasive Nonnative Species.

Standard/Guideline
11. 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.
<i>California Spotted Owl PACs and HRCAs</i>
12. Delineate California spotted owl protected activity centers (PACs) surrounding each territorial owl activity center detected on National Forest System lands since 1986. Owl PACs 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.
13. 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.
14. 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.
15. 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.
16. 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.
17. 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.
18. Maintain a limited operating period (LOP), prohibiting activities within approximately ¼ mile of the nest site during the breeding season (March 1 through August 15) 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.
19. 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.
20. 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.
21. 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.
22. In PACs located outside the defense zone of the wildland urban 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.

Standard/Guideline
<p>23. In PACs located inside the defense zone of the wildland urban 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 Monument land allocation.</p>
<p>24. Evaluate proposals for new roads, trails, off-highway vehicle routes, and recreational and other developments for their potential to disturb nest sites. Mitigate effects 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).</p>
<p>25. Establish a home range core area surrounding each territorial spotted owl activity center detected after 1986. Home range core area size is 600 acres on the Sequoia National Forest.</p>
<p>26. Use aerial photography to delineate California spotted owl home range core areas. 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.</p>
<p>27. 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.</p>
<p>28. 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 wildland urban intermix.</p>
<p><i>Northern Goshawk PACs</i></p>
<p>29. 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 fledgling dependency period.</p>
<p>30. 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. Non-forest vegetation (such as brush and meadows) should not be counted as part of the 200 acres.</p>
<p>31. 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.</p>
<p>32. 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.</p>

Standard/Guideline
33. 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.
34. 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.
35. 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.
36. 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.
37. 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.
38. Evaluate proposals for new roads, trails, and recreational and other developments for their potential to disturb nest sites. Mitigate effects where there is documented evidence of disturbance to the nest site from existing recreation, trail, and road uses (including road maintenance).
39. In PACs located outside the defense zone of the wildland urban 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.
40. In PACs located inside the defense zone of the wildland urban 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 Monument land allocation.
<i>Great Gray Owl PACs</i>
41. 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.
42. 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.
43. Evaluate proposals for new roads, trails, and recreational and other developments for their potential to disturb nest sites. Mitigate effects where there is documented evidence of disturbance to the nest site from existing recreation, trail, and road uses (including road maintenance).

Standard/Guideline
44. In meadow areas of great gray owl PACs, maintain herbaceous vegetation at a height commensurate with site capability and habitat needs of prey species. Where available, follow regional guidance to determine potential prey species and associated habitat requirements at the project level.
<i>Southern Sierra Fisher Conservation Area (SSFCA)/Furbearer Den Sites</i>
45. Assess the effect of vegetation management on Pacific fisher habitat using models appropriate for the scale of the project.
46. 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.
47. In areas outside the wildland urban 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.
48. 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.
49. 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.
50. 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.
51. Evaluate the appropriateness of LOPs for existing uses in fisher den site buffers during environmental analysis.
52. 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 wildland urban 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.
53. Evaluate proposals for new roads, trails, off-highway vehicle routes, and recreational and other developments for their potential to disturb den sites. Mitigate effects 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).
<i>Marten Den Sites</i>
54. 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.
55. 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.
56. Evaluate the appropriateness of LOPs for existing uses in marten den site buffers during environmental analysis.

Standard/Guideline
57. Avoid fuel treatments in marten den site buffers to the extent possible. If areas within den site buffers must be treated to achieve fuels objectives for the wildland urban 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.
58. Evaluate proposals for new roads, trails, off-highway vehicle routes, and recreational and other developments for their potential to disturb den sites. Mitigate effects 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).
<i>Willow Flycatcher Sites</i>
59. Evaluate proposals for new concentrated stock areas (for example, livestock handling and management facilities, pack stations, equestrian stations, and corrals) located within five miles of occupied willow flycatcher sites.
60. As part of landscape analysis, give priority to meadow restoration opportunities near or adjacent to known willow flycatcher sites.
61. 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 [meadows larger than 15 acres that have standing water on June 1 and a deciduous shrub component], and (4) small, wet woody meadows (meadows less than 15 acres that have standing water on June 1 and a deciduous shrub component).
62. Continue a 4-year cycle for conducting willow flycatcher surveys in all five known willow flycatcher sites in the Monument.
63. In meadows with occupied willow flycatcher sites, allow only late-season grazing (after August 15) in the entire meadow. This standard and guideline may be waived if an interdisciplinary team has developed a site-specific meadow management strategy. This strategy is to be developed and implemented in partnership with the affected grazing permittee. The strategy objectives must focus on protecting the nest site and associated habitat during the breeding season and the long-term sustainability of suitable habitat at breeding sites. It may use a mix of management tools, including grazing systems, structural improvements, and other exclusion by management techniques to protect willow flycatcher habitat.
64. In willow flycatcher sites receiving late season grazing, monitor utilization annually using regional range analysis and planning guide. Monitor willow flycatcher habitat every 3 years using the following criteria: rooting depth cores for meadow condition, point intercepts for shrub foliar density, and strip transects for shrub recruitment and cover. Meadow condition assessments will be included in a GIS meadow coverage. If habitat conditions are not supporting the willow flycatcher or trend downward, modify or suspend grazing.
65. For historically occupied willow flycatcher sites, assess willow flycatcher habitat suitability within the meadow. If habitat is degraded, develop restoration objectives and take appropriate actions (such as physical restoration of hydrological components, limiting or re-directing grazing activity and so forth) to move the meadow toward desired conditions.
66. Evaluate site condition of historically occupied willow flycatcher sites. Those sites that no longer contain standing water on June 1 and a deciduous shrub component and cannot be reasonably restored may be removed from the willow flycatcher site database. As part of the project planning process, survey emphasis habitat within five miles of occupied willow flycatcher sites to determine willow flycatcher occupancy. Emphasis habitat is defined as meadows larger than 15 acres that have standing water on June 1 and a deciduous shrub component. Use established protocols to conduct these surveys. If these surveys determine willow flycatcher occupancy, add these to the database of occupied willow flycatcher sites and include them in the 4-year survey cycle of willow flycatcher sites described above.

Standard/Guideline
Plant Habitat⁽⁵⁾
<i>Monument-wide</i>
1. Minimize or eliminate direct and indirect effects on threatened, endangered, proposed, and sensitive (TEPS) plants unless management activities are designed to maintain or improve plant populations.
2. Prohibit or mitigate ground-disturbing activities that negatively affect hydrologic processes that maintain water flow, water quality, or temperature critical to sustaining fen ecosystems and the plant species dependent on them. During project analysis, survey, map and protect fens from activities such as trampling by livestock, pack stock, humans, and wheeled vehicles. Criteria for defining fens include, but are not limited to, presence of sphagnum moss (<i>Sphagnum spp.</i>), presence of mosses in the genus <i>Meesia</i> , or presence of sundew (<i>Drosera spp.</i>). Complete initial inventories of fens within active grazing allotments prior to re-issuing permits.
3. Conduct field surveys for 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.
Invasive Nonnative Species
<i>Monument-wide</i>
1. Inform forest users, local agencies, special use permittees, groups, and organizations in communities near national forests about noxious weed prevention and management.
2. 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.
3. 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. Develop mitigation measures for high and moderate risk activities.
4. 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.
5. 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.
6. Conduct follow-up inspections of ground-disturbing activities.
7. 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.
8. 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).
9. Include weed prevention measures and weed control treatments in mining reclamation plans. Monitor for weeds, as appropriate, for 2 years after project implementation (assuming no weed introductions have occurred).
10. 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 three (3) years after the fire.
11. During landscape analysis or project-level planning, consider restoring or revegetating degraded ecosystems to minimize the potential for noxious weed re-infestations (USDA 2008; FSM Chapter 2070).
12. Consult with American Indians to determine priority areas for weed prevention and control where traditional gathering areas are threatened by weed infestations.

5. Includes Botanical Resources; Threatened, Endangered, and Sensitive Plants; and Invasive Nonnative Species.

Standard/Guideline
13. Review and update noxious weed inventories on an annual basis.
14. When new, small weed infestations are detected, emphasize eradication of these infestations while providing for the safety of field personnel.
15. 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.
Range⁽⁶⁾
<i>Monument-wide</i>
1. 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).
2. In meadow areas of great gray owl PACs, maintain herbaceous meadow vegetation at a height commensurate with site capability and habitat needs of prey species. Where available, follow regional guidance to determine potential prey species and associated habitat requirements at the project level.
3. 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.
4. 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.
5. 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.
6. Where professional judgment and quantifiable measurements find that current practices are maintaining range in good to excellent condition, the grazing utilization standards above may be modified to allow for the Forest Service, in partnership with individual permittees, to rigorously test and evaluate alternative standards.
7. 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 sites.
8. Cattle will be distributed in a manner consistent with moderate forage utilization within meadows. Use any acceptable method as described in the most current version of the Rangeland Analysis and Planning Guide to monitor the results.
9. Grazing will cease in time to permit re-growth sufficient to store carbohydrates for initial spring growth (as specified in individual allotment plans).
10. Meadows will be grazed to allowable use standards as determined by use of any applicable method described in the most current version of the Region 5 Rangeland Analysis and Planning Guide.

6. Also see standards and guidelines in the watershed resources and wildlife, willow flycatcher section that pertain to range management.

Standard/Guideline																																																												
Hydrological Resources																																																												
<i>Monument-wide</i>																																																												
<i>Riparian and Wetland</i>																																																												
1. Manage riparian areas under the principles of multiple use and sustained yields, while emphasizing protection and improvement of soil, water, vegetation, and fish and wildlife resources. Give preferential consideration to riparian-dependent resources when conflicts among land use activities occur.																																																												
2. Give special attention to land and vegetation for approximately 100 feet from the edges of all perennial streams, lakes, and other bodies of water. This distance shall correspond to at least the recognizable area dominated by the riparian vegetation.																																																												
3. Provide protection where resource management activities are likely to seriously and adversely affect water conditions or fish habitat.																																																												
4. Facilitate the determination of sound vegetation manipulation practices based on watershed conditions and land capability, rather than decisions based solely on silvicultural characteristics and the public demand for goods.																																																												
5. Delineate and evaluate riparian areas prior to implementing any project activity.																																																												
6. Avoid long- and short-term adverse effects associated with modification of floodplains and wetlands. Minimize, to the extent practicable, destruction, loss, or degradation of wetlands (E.O. 11988 Floodplain Management and E.O. 11990 Protection of Wetlands) (BMP 1.18).																																																												
<i>Cumulative Watershed Effects Analysis</i>																																																												
7. Utilize the Sequoia National Forest’s cumulative watershed effects (CWE) methodology for application within the forest to assess each project for potential to incur cumulative effects. The Forest shall determine the proper size of the watershed unit to be subject to CWE analysis based on the identified beneficial use(s). The unit size will generally range from 250 to 2,000 acres.																																																												
8. Identification and Evaluation of Processes Within the Watershed (CWE Analysis). The Sequoia National Forest staff will determine the controlling processes of concern (as required by FSM 2509.22, 7/88, Amendment 1) in order to assess disturbance coefficients and mitigation opportunities.																																																												
<i>Streamside Management Zones</i>																																																												
9. Streamside Management Zones will be established and maintained for all stream courses and wetlands affected by management activities. Project plans will be designed to include site-specific prescriptions for the prevention of sedimentation, stream damage, and the protection of riparian dependent species (Clean Water Act, P.L. 92-500, Section 208).																																																												
<table border="1"> <thead> <tr> <th rowspan="2">Stream Class</th> <th colspan="5">SMZ Width by % Slope</th> <th rowspan="2">Stream Order</th> </tr> <tr> <th><30%</th> <th>>30%</th> <th>>40%</th> <th>>50%</th> <th>>70%</th> </tr> </thead> <tbody> <tr> <td>Meadows, Seeps, Springs, Bogs</td> <td>100</td> <td>150</td> <td>200</td> <td>250</td> <td>1.5 times distance to slope break</td> <td>-</td> </tr> <tr> <td>I</td> <td>100</td> <td>150</td> <td>200</td> <td>250</td> <td>1.5 times distance to slope break</td> <td>4+</td> </tr> <tr> <td>II</td> <td>100</td> <td>100</td> <td>150</td> <td>200</td> <td></td> <td>3-4</td> </tr> <tr> <td>III</td> <td>50</td> <td>100</td> <td>100</td> <td>150</td> <td></td> <td>2-3</td> </tr> <tr> <td>IV</td> <td><50</td> <td><50</td> <td>75</td> <td>100</td> <td></td> <td>1-2</td> </tr> <tr> <td>IV</td> <td><50</td> <td><50</td> <td><50</td> <td><50</td> <td></td> <td>1-0</td> </tr> </tbody> </table>							Stream Class	SMZ Width by % Slope					Stream Order	<30%	>30%	>40%	>50%	>70%	Meadows, Seeps, Springs, Bogs	100	150	200	250	1.5 times distance to slope break	-	I	100	150	200	250	1.5 times distance to slope break	4+	II	100	100	150	200		3-4	III	50	100	100	150		2-3	IV	<50	<50	75	100		1-2	IV	<50	<50	<50	<50		1-0
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10. The following table displays the appropriate management requirements and constraints with respect to stream type and class. Manage for specific components of the Pfankuch channel and stream stability indices that might be affected by management activities. Evaluate special conditions at the project level:

<u>Riparian Ecotype</u>	<u>Environmental Indicator</u>			
	<u>Vegetative Bank Protection</u>	<u>Bank Cutting</u>	<u>Bottom Deposition and Scour & Deposition</u>	<u>Bottom Size Distribution and % Stable Material</u>
<u>Naturally Stable</u> Riparian Channel Type: A1, A2, B1, B2, B3, C1, C2, F1, F2, G1, G2 <i>Restoration Not Required</i>	NA	NA	Low frequency of mid-channel bars and good pool to riffle ratio	NA
<u>Stable Sensitive</u> Riparian Channel Type: B4, B5, B6, C3, C4, C5, C6, E3, E4, E5, E6 <i>Recover with Passive Restoration</i>	80 to 90 % ground cover with stable continuous root mass	Less than or equal to 1 foot of exposed bank cuts affecting less than or equal to 20% of the channel	Little or no sand bar development with 0 to 5% of the bottom affected by bar deposition	NA
<u>Unstable-Sensitive</u> Riparian Channel Type: G2, G3, G4, G5, G6, F3, F4, F5, F6, and those D3, D4, D5, D6 in unexpected geomorphic settings. <i>Recover with Active Restoration</i>	Greater than or equal to 70 % ground cover with stable continuous root mass	Less than or equal to 1 foot of exposed bank cuts affecting less than or equal to 30% of the channel	Low frequency of mid channel bar development, Improved pool to riffle ratio, with 5 to 30% deposition behind obstructions	Slight size distribution shift between 50-80% stable material
<u>Naturally Unstable</u> Riparian Channel Type: A3, A4, A5, A6 (Landslide and Debris slide Terrain) <i>Inoperational to Restore</i>	NA	NA	NA	NA

11. Conduct monitoring of individual management practices to determine how well objectives have been met and how closely management standards and guidelines have been applied (NFMA, NEPA, FSM 1922.7, 36 CFR 219.12k).

Interception of Sediment and Ground Cover Requirements

12. Correct existing and prevent potential water quality problems through the implementation of best management practices (BMPs) as contained in Water Quality Management for the National Forest System Lands in California: a State of California Water Resources Control Board (SWRCB)/USDA Forest Service Cooperative Agreement (Clean Water Act, P.L. 92-500, Section 208). This agreement contains the following provisions from NFMA P.L. 94.588:

- Protection of stream courses from detrimental changes in temperature (BMP 1.8).
- Protection of stream courses from blockage (BMP 1.19).
- Protection of stream courses from detrimental deposits of sediment (BMP 1.19).

Riparian Conservation Areas (RCAs) and Critical Aquatic Refuges (CARs)

13. Designate riparian conservation area (RCA) widths as described in the 2004 SNFPA ROD, Appendix A, Part B, pages 42 and 62:

Perennial Streams: 300 feet on each side of the stream, measured from the bank full edge of the stream.

Seasonally Flowing Streams (includes intermittent and ephemeral streams): 150 feet on each side of the stream, measured from the bank full edge of the stream.

Streams in Inner Gorge: top of inner gorge.

Special Aquatic Features (lakes, wet meadows, bogs, fens, wetlands, vernal pools, and springs) or Perennial Streams with Riparian Conditions extending more than 150 feet from edge of streambank

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<p>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.</p> <p>Other hydrological or topographic depressions without a defined channel: RCA width and protection measures determined through project level analysis.</p> <p>RCA widths may be adjusted at the project level if a landscape analysis has been completed and a site-specific riparian conservation objective (RCO) analysis demonstrates a need for different widths.</p>
<p>14. Evaluate new proposed management activities within the critical aquatic refuges (CARs) and RCAs during environmental analysis to determine consistency with the riparian conservation objectives at the project level and the aquatic management strategy goals for the landscape. Ensure that appropriate mitigation measures are enacted to (1) minimize the risk of activity-related sediment entering aquatic systems, and (2) minimize effects to habitat for aquatic- or riparian-dependent plant and animal species.</p>
<p>15. Identify existing uses and activities in the CARs and RCAs during landscape analysis. At the time of permit re-issuance, evaluate and consider actions needed for consistency with RCOs.</p>
<p>16. As part of project-level analysis, conduct peer reviews for projects that propose ground-disturbing activities in more than 25 percent of the RCAs or more than 15 percent of the CARs.</p>
<p><i>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.</i></p>
<p>17. For waters designated as “water quality limited” (Clean Water Act Section 303(d)), implement appropriate state mandates for the waterbodies, such as total maximum daily load (TMDL) protocols.</p>
<p>18. Ensure that management activities do not adversely affect water temperatures necessary for local aquatic- and riparian-dependent species assemblages.</p> <p>Maintain temperature at no more than a daily average of 20° C on streams affected by management activities. Evaluate stream courses with special circumstances, such as those affected by hot springs or other geologic and geochemical features, on a site-by-site basis at the project level.</p> <p>Maintain average stream surface shade at >60 percent on streams affected by management activities. Assess meadow environments and streams with limited overhead vegetation on a site-by-site basis at the project level.</p> <p>Ensure that management activities do not adversely affect pH values necessary for local aquatic and riparian-dependent species as defined by the Central Valley Water Quality Board Basin Plan. Maintain pH values between 6.5 and 8.5 on streams affected by management activities. Evaluate water bodies that exhibit special conditions at the project level, including waters affected by hot springs in the presence of CO₂ springs or other geologic and geochemical features (such areas would be expected to yield pH values outside the range of state standards).</p> <p>Ensure that management activities do not adversely affect alkalinity values, which can affect pH values, necessary for local aquatic- and riparian-dependent species as defined by the Central Valley Water Quality Board Basin Plan. Maintain alkalinity values of no less than 10 mg/L. Site-specific differences could occur based on local geology and water chemistry. Evaluate values outside this range at the project level.</p>
<p>19. Limit pesticide applications to cases where project-level analysis indicates that pesticide applications are consistent with RCOs. Use local channel geometry curves to determine the location of flood prone areas. Do not apply pesticides, including gopher baiting, within the floodprone area of perennial or intermittent stream courses. If a project’s objectives include treatment of riparian areas, evaluate conditions on a site-by-site basis at the project level.</p>
<p>20. Within 500 feet of known occupied sites for the California red-legged frog, foothill yellow-legged frog, or mountain yellow-legged frog, design pesticide applications to avoid adverse effects to individuals and their habitats.</p>

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<p>21. Prohibit storage of fuels and other toxic materials within RCAs and CARs except at designated administrative sites and sites covered by a special use authorization. Prohibit refueling within RCAs and CARs unless there is no other alternative. Ensure that spill plans are reviewed and up-to-date.</p>
<p>Riparian Conservation Objective 2: <i>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.</i></p>
<p>22. 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.</p> <p>Maintain and restore the hydrologic connectivity of meadows by identifying those at risk. Implement corrective actions, where necessary, to restore connectivity of meadows to their floodplain.</p> <p>A stream condition inventory (SCI) may be used instead of proper functioning condition (PFC) to validate an existing PFC determination or existing meadow condition.</p> <p>Perform a full hydrologic survey prior to restoration. Include a longitudinal profile and adequate cross-section surveys to determine design parameters. At a minimum, determine meadow pattern, profile, and dimensions for the impaired site and the design.</p> <p>Design projects by a qualified specialist prior to implementation. A qualified specialist is one that has received training in river restoration and natural channel design. Have the design reviewed by a forest hydrologist prior to implementation.</p> <p>Make sure all restoration is sustainable. Designs that require continued maintenance are not considered sustainable.</p>
<p>23. 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 on 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.</p>
<p>24. Prior to activities that could adversely affect streams, determine if relevant stream characteristics are within the range of natural variability. If characteristics are outside the range of natural variability, implement mitigation measures and short-term restoration actions needed to prevent further declines or cause an upward trend in conditions. Evaluate required long-term restoration actions and implement them according to their status among other restoration needs.</p> <p>Maintain width to depth ratios for A and E channels of values less than 14 on streams affected by management activities. Maintain width to depth ratios for B, C, and F channels of values greater than 10 on stream channels affected by management activities. Encourage G and F channels to trend towards width to depth ratios greater than 12.</p> <p>Evaluate streams affected by management activities to detect shifts in mean particle size toward fine material in stable channel types (A, B, C, or E) to the extent that a change in channel type occurs. Mean particle size would be expected to change in impaired systems or following restoration activities. Evaluate stream courses with special circumstances on a site-by-site basis at the project level.</p> <p>Manage for specific components of the Pfankuch channel and stream stability indices that might be affected by management activities. Evaluate special conditions at the project level:</p>

Standard/Guideline				
Riparian Ecotype	Environmental Indicator			
	Vegetative Bank Protection	Bank Cutting	Bottom Deposition and Scour & Deposition	Bottom Size Distribution and % Stable Material
Naturally Stable Riparian Channel Type: A1, A2, B1, B2, B3, C1, C2, F1, F2, G1, G2 <i>Restoration Not Required</i>	NA	NA	Low frequency of mid-channel bars and good pool to riffle ratio	NA
Stable Sensitive Riparian Channel Type: B4, B5, B6, C3, C4, C5, C6, E3, E4, E5, E6 <i>Recover with Passive Restoration</i>	80 to 90 % ground cover with stable continuous root mass	Less than or equal to 1 foot of exposed bank cuts affecting less than or equal to 20% of the channel	Little or no sand bar development with 0 to 5% of the bottom affected by bar deposition	NA
Unstable-Sensitive Riparian Channel Type: G2, G3, G4, G5, G6, F3, F4, F5, F6, and those D3, D4, D5, D6 in unexpected geomorphic settings. <i>Recover with Active Restoration</i>	Greater than or equal to 70 % ground cover with stable continuous root mass	Less than or equal to 1 foot of exposed bank cuts affecting less than or equal to 30% of the channel	Low frequency of mid channel bar development, improved pool to riffle ratio, with 5 to 30% deposition behind obstructions	Slight size distribution shift between 50-80% stable material
Naturally Unstable Riparian Channel Type: A3, A4, A5, A6 (Landslide and Debris slide Terrain) <i>Inoperational to Restore</i>	NA	NA	NA	NA

For stable streams (A, B, C, or E), maintain or improve the channel, as necessary, based on the Pfankuch channel and stream stability indices. Take action to maintain or improve stream sites based on successional stage shifts away from stable conditions. For impaired stream reaches (G, F, or D), successional stage shifts from the impaired stream reach would show a trend toward an unimpaired condition.

25. Prevent disturbance to streambanks and natural lake and pond shorelines caused by management activities and resource use (such as livestock and dispersed recreation) from exceeding 20 percent of a 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, sites authorized under special use permits, or roads.

26. In stream reaches occupied by, or identified as “essential habitat” in the conservation assessment for 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 2004 SNFPA ROD, page 10; see <http://www.tucalifornia.org/cgtic/GTCAssessmnt&Strategy9-04.pdf>). 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.

Maintain width to depth ratios for A and E channels of values less than 14 on streams affected by management activities. Maintain width to depth ratios for B, C, and F channels of values greater than 10 on streams affected by management activities. Encourage G channels to trend towards width to depth ratios greater than 12.

27. At either the landscape or project level, 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 conditions are outside the range of natural variability, consider implementing mitigation and/or 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.

28. 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.

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<p>29. 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.</p>
<p>Riparian Conservation Objective 3: <i>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.</i></p>
<p>30. Determine if the level of coarse large woody debris is within the range of natural variability in terms of frequency and distribution and is sufficient to sustain stream channel physical complexity and stability. Ensure that proposed management activities move conditions toward the range of natural variability for coarse large woody debris.</p> <p>Maintain woody material in and adjacent to stream courses. Where fire is responsible for removal of woody material, replace at levels associated with pre-fire conditions if possible. Evaluate the amount of wood necessary for maintenance of stream stability, sediment reduction, and aquatic species habitat.</p>
<p>Riparian Conservation Objective 4: <i>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.</i></p>
<p>31. 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 effects to these species whenever ground-disturbing equipment is used.</p>
<p>32. Use screening devices for water drafting pumps (fire suppression activities are exempt during initial attack). Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses, and tadpoles.</p>
<p>33. 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 mitigation measures, weigh the potential harm of mitigation measures (e.g., firelines) 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 when fire suppression or fuel management actions could be damaging to habitat or the long-term function of a riparian community.</p>
<p>34. 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.</p>
<p>35. Allow hazard tree removal within RCAs or CARs if it is clearly needed for public safety. Allow mechanical ground-disturbing fuels treatments or fuelwood cutting within RCAs or CARs when the activity is consistent with RCOs and is clearly needed for ecological restoration and maintenance or public safety. Utilize low-ground-pressure equipment, helicopters, or other non-ground-disturbing actions off of existing roads when needed to achieve RCOs. Ensure that existing roads meet best management practices (BMPs). Minimize the construction of new roads into RCAs for access for fuel treatments, fuelwood cutting, or hazard tree removal.</p>
<p>36. As appropriate, assess and document aquatic conditions following the regional stream condition inventory protocol prior to implementing ground-disturbing activities within suitable habitat for California red-legged frogs, foothill yellow-legged frogs, and mountain yellow-legged frogs.</p> <p>Maintain average stream surface shade at or above 60 percent on streams affected by management activities. Assess meadow environments and other streams with limited overhead vegetation for site-specific projects.</p> <p>Maintain width to depth ratios for A and E channels of values less than 14 on streams affected by management activities. Maintain width to depth ratios for B, C, and F channels of values greater than 10 on streams affected by management activities. Encourage G channels to trend towards width to depth ratios greater than 12.</p>

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<p>Evaluate streams affected by management activities to detect shifts in mean particle size toward fine material in stable channel types (A, B, C, or E) to the extent that a change in channel type occurs. Mean particle size would be expected to change in impaired systems or following restoration activities. Evaluate stream courses with special circumstances on a site-by-site basis at the project level.</p>
<p>Maintain 85 percent of any waterbodies affected by management activities at no less than very good water quality based on the Hilsenhoff biotic index or similar indices. Evaluate waterbodies outside of this range for site-specific effects. Indices would be less than 4.50 on Hilsenhoff biotic index or indicate very good water quality with similar indices. A biotic index or other index of this value should indicate no apparent to possible slight organic pollution. Evaluate waterbodies outside of this range for site-specific projects.</p>
<p>Manage for specific components of the Pfankuch channel and stream stability indices that might be affected by management activities. Evaluate special conditions at the project level (see previous table).</p>
<p>37. During fire suppression activities, consider effects 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 pre-suppression planning, include guidelines for suppression activities that avoid potential adverse effects to aquatic- and riparian-dependent species.</p>
<p>38. Identify roads, trails, staging areas, developed recreation sites, dispersed campgrounds, areas under special use permits or 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, evaluate and consider actions to ensure consistency with standards and guidelines.</p>
<p><i>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.</i></p>
<p>39. Assess the hydrologic function of meadow habitats and other special aquatic features during site-specific range management analysis. Ensure that characteristics of special features are, at a minimum, at proper functioning condition (PFC), as defined in the following technical reports (or their successor publications): (1) Process for Assessing PFC, TR 1737-9 (1993); (2) PFC for Lotic Areas, USDI TR 1737-15 (1998); (3) PFC for Lentic Riparian-Wetland Areas, USDI TR 1737-11 (1994); and (4) Assessing Proper Functioning Condition for Fen Areas in the Sierra Nevada and Southern Cascade Ranges in California: A User Guide, USDA Forest Service, R5-TP-028 (April 2009).</p>
<p>Assess the hydrologic function of at-risk meadow habitats. Ensure that characteristics are, at a minimum, at PFC as defined in the Process for Assessing PFC, TR 1737-9 (1993); PFC for Lotic Areas, USDI TR 1737-15 (1998); or PFC for Lentic Riparian-Wetland Areas, USDI TR 1737-16 (Rev. 2003).</p>
<p>40. 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, the presence of sphagnum moss (<i>Sphagnum</i> spp.), mosses belonging to the genus <i>Meessia</i>, or sundew (<i>Drosera</i> spp.). Complete initial plant inventories of bogs and fens within active grazing allotments prior to re-issuing permits.</p>
<p>Maintain temperature at a daily average of no more than 20° C on streams affected by management activities. Evaluate stream courses with special circumstances or conditions, such as those affected by hot springs, for site-specific projects.</p>
<p>41. Locate new facilities for gathering livestock and pack stock outside of meadows and RCAs. During project-level planning, evaluate and consider relocating existing livestock facilities outside of meadows and riparian areas. Prior to re-issuing grazing permits, assess the compatibility of livestock management facilities located in RCAs with RCOs.</p>
<p>42. Determine ecological status on all key areas monitored for grazing utilization prior to establishing utilization levels. Use regional ecological score cards and range plant list in regional range handbooks to determine</p>

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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 geographic information system (GIS) database.
43. 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 affected. 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.
44. Limit browsing to no more than 20 percent of the annual leader growth of mature riparian shrubs 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 herbaceous vegetation to woody riparian vegetation.
<i>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.</i>
45. Recommend restoration practices in: (1) areas with compaction higher than that allowed in soil quality standards, (2) areas with lowered water tables, or (3) areas with either active downcutting or historic gullies. Identify other management activities (e.g., road building, recreational use, grazing, and fuels reduction) that may be contributing to the observed degradation. Use water-dependent vegetation as a surrogate to evaluate riparian soil moisture condition. Maintain width to depth ratios for A and E channels of values less than 14 on streams affected by management activities. Maintain width to depth ratios for B, C, and F channels of values greater than 10 on streams affected by management activities. Encourage G channels to trend towards width to depths greater than 12. For stable streams (A, B, C, or E), maintain or improve the channel as necessary based on stability indices. Take action to maintain or improve stream sites based on successional stage shifts away from stable conditions. For impaired stream reaches (G, F, or D), successional stage shifts from the impaired stream reach would show a trend toward an unimpaired condition.
Groundwater
<i>Monument-wide</i>
1. Establish a minimum distance from a connected river, stream, wetland, or other groundwater-dependent ecosystem from which a well may be sited.
2. Establish minimum limits to which water levels can be drawn down at a specified distance from a groundwater-dependent ecosystem.
3. Conduct appropriate analyses when evaluating proposals and applications for water wells or other activities that propose to test, study, monitor, modify, remediate, withdraw, or inject ground water on NFS lands (see Technical Guide to Managing Ground Water Resources, FS-881, May 2007).
Geological Resources
<i>Monument-wide</i>
1. Protect cave entrances from all activities, including prescribed fire, mechanical treatments, and recreation.
2. Evaluate proposed septic systems to determine their potential to contaminate groundwater that moves through cave systems.
Soil Resources
<i>Monument-wide</i>
1. During management activities maintain an average of 50 percent effective soil cover in treatment areas that is well distributed and generally in the form of fine organic matter. Effective soil cover is that whose thickness and continuity provides adequate protection to prevent rill network formation. Fine organic matter includes plant litter, duff, and woody material less than 3 inches in diameter.

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Management activities in areas with ecological types that cannot normally support 50 percent soil cover will need to be considered individually for soil cover needs. In special areas such as fuelbreaks and defense zones, immediate post-treatment soil cover levels less than 50 percent will be allowed as long as the site conditions and actual cover level will prevent erosion. Field review and monitoring should be used to determine the minimal level of soil cover necessary in special areas.
2. Maintain 100 percent soil cover in a 100-foot-wide buffer below rock outcrops that have the potential to generate runoff into management activity areas and cause erosion.
3. In areas where sustained slopes exceed 35 percent, limit mechanical operations such as skidding, tractor piling, grapple piling, and mastication, except where supported by on-the-ground evaluation by an interdisciplinary team that includes a watershed specialist.
4. Limit total soil compaction (displacement and total soil porosity reduction) to less than 15 percent of the management activity area. No more than 10 percent of the activity area can be displaced. Temporary roads, temporary landings, and skid trails will be considered part of the activity area to evaluate. Areas excluded from this standard include National Forest System roads, trails, and facilities, and other dedicated sites. Soil will be considered displaced if more than one-half of the thickness of the topsoil or A horizon has been removed from a contiguous area larger than 100 sq. ft. Soil will be considered compacted if there is less than 90 percent total soil porosity in a contiguous area greater than 100 sq. ft compared to undisturbed soils nearby. Conduct operations when soil porosity, especially macroporosity, will be maintained at a level sufficient for soil hydrologic function and long-term soil productivity for plant growth. Use the latest findings of studies such as that for Long Term Soil Productivity by Powers to evaluate the effects to soil productivity from porosity changes.
5. Maintain aquatic soil moisture conditions (defined in Soil Taxonomy) in wet meadows and fens. Areas with aquatic soil moisture conditions include wet meadows and fens where soil moisture levels remain high throughout most of the year. Maintain soil structure and porosity. Use the presence and density of water-dependent vegetation as indicators of soil moisture condition.
6. Maintain downed logs for soil organisms, based upon the ecological type and in consultation with wildlife and fuels.
7. For projects involving the application of chemicals, such as herbicides, pesticides, or other amendments, evaluate the effects to soil micro-organisms, post-project erosion risk, leaching potential, and risk of off-site movement of the chemicals. Provide recommendations to prevent adverse effects.
Human Uses ⁽⁷⁾
<i>Recreation</i>
<i>Monument-wide</i>
1. Cross-country travel (non-motorized [e.g., horses, hikers—non-mechanized]) may be restricted to prevent resource damage.
2. Manage dispersed recreation activities by location and period of use based on wildlife needs (e.g., excluding incompatible use from key areas during fawning and nesting).
<i>Energy</i>
<i>Monument-wide</i>
1. Encourage energy development, when sources are available, as long as the development is consistent with other standards and guidelines.
<i>Scenery</i>
<i>Monument-wide</i>
1. Design management activities to meet and exceed when practical the specified Scenic Integrity Objective (SIO).

7. Including Recreation, Scenery, and Socioeconomics.

Standard/Guideline
2. Meet scenic integrity objectives with the following exceptions: (1) accept occasional short-term departure from adopted minimum scenic integrity that will lead to long-term desired scenic character if disclosed in a site-specific NEPA decision, and (2) temporary drops of one minimum scenic integrity level may be made during and immediately following project implementation providing they do not exceed 3 years in duration.
3. Include mitigation measures for activities that alter the landscape beyond the adopted minimum scenic stability.
Cultural Resources
<i>Monument-wide</i>
1. Fully integrate opportunities for preservation, protection, and utilization of cultural resources into land use planning and decisions through: <ul style="list-style-type: none"> (1) Assessing potential effects on heritage resources on a project-specific basis. (2) Avoiding or mitigating effects on sites eligible for the National Register or other significant sites. (3) Follow-up monitoring to assess the effectiveness of management procedures. (4) Post and sign (e.g., tractors prohibited, Antiquities Act) selected cultural resource sites where such signing will not endanger the sites. (5) Monitor number of sites for protection visits on revolving basis, and prioritize according to resource significance and vulnerability as developed in the forest overview. (6) Develop and provide interpretive brochures for selected sites.
2. Conduct inventories as necessary, occasionally doing non-project-specific surveys. Complete archaeological reconnaissance reports and site records to allow evaluation of site significance. Release those site locations declared not significant for other management activities. Approach systematically the reduction of the existing forest backlog of sites to be evaluated. Those types of sites deemed more potentially critical in the forest overview will receive priority.
3. Conduct on-the-ground interpretation at a number of sites that exist at or near developed sites, where high level of use or exposure is possible (i.e., properties adjacent to campgrounds, historic logging activities in the vicinity of campgrounds).
4. Regularly consult with Native Americans as interested parties on proposed undertakings.
Transportation System
<i>Monument-wide except Wilderness</i>
1. 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.
2. Maintain developed trailhead access roads and primary access routes to developed facilities at a minimum of maintenance level 3.
3. Use seasonal closure as a tool to protect key wildlife values, environmental resources, and road investment.
4. Limit motorized vehicles to designated roads.
5. Limit non-motorized mechanized vehicles (such as bicycles) to designated roads and trails.
6. Limit over-snow vehicles to designated roads.
Wilderness
7. Construct and maintain trail bridges consistent with wilderness uses.

Standard/Guideline
Special Areas, including Special Interest Areas
<i>Kings River Special Management Area (KRSMA)</i>
1. Archaeological sites: Sites are maintained in a condition that will permit an evaluation of significance and, if appropriate, listing in the National Register of Historic Places. Significant sites are protected to permit future data recovery (KRSMA MP p. 53).
2. Suitable fish habitat: R-5 minimum management requirements, FLMP guidelines, riparian standards and guidelines, and best management practices are being applied in a way that supports the objectives established in the SMA and WSR EIS and Plan; and project-specific NEPA documents (KRSMA MP p. 53).
3. Management of SMA and WSR: Periodic reviews to evaluate the effectiveness of management directions and monitoring plan indicate that the documents reflect the current environmental social and administrative needs in the area (KRSMA MP p. 53).
4. Transportation system: The transportation system’s effectiveness meets the opportunity class and zone objectives. Project-specific NEPA documents and the forest trails plan reflect the objective in the SMA and WSR EIS and Plan (KRSMA MP p. 54).
5. Water quality: Implementation of BMPs and project design do not permit a decrease in water quality (KRSMA MP p. 54).
6. TES species: Project plans and prescriptions are implemented as designed, consistent with the biological evaluations (KRSMA MP p. 54).
<i>Standards for South Fork Zone (Kings South Fork Wild and Scenic River)⁽⁸⁾</i>
7. Public use areas consistency with opportunity class III: Dispersed recreation effects are temporary, and are commonly only fire rings in the turnouts along Highway 180. Effects from recreation activities may be evident to the visitor. Use areas are generally >50 feet apart and are fewer than two per 320 acres (KRSMA MP p. 57).
8. Management of Highway 180, Boyden Cavern, and Grizzly Falls: Adequate parking is provided, sanitation facilities meet current needs, and all facilities complement the area’s natural scenic resources (KRSMA MP p. 57).
9. Zone aside from Highway 180, Boyden Cavern, and Grizzly Falls: A low probability of meeting other parties or forest users during low-use periods (<50 percent chance), a possible encounter with other recreationists during the spring (25 to 50 percent chance) (KRSMA MP p. 57).
10. Management focus on river-based and unique opportunities: all resource conditions, social conditions, and management activities reflect the characteristics described for opportunity class II and the objectives for this zone (KRSMA MP p. 57).
<i>Standards for Verplank Zone</i>
11. Campsite consistency with opportunity class II: Campsites are small and temporary. Some facilities are provided. Effects from recreation activities may be evident to the visitor. Campsites are greater than 50 feet apart and are fewer than five per 320 acres (KRSMA MP p. 58).
12. Few encounters between travelers: A low probability of meeting other parties or forest users during low-use periods (less than 50 percent chance), a possible encounter with other recreationists during the spring (25 to 50 percent chance) (KRSMA MP p. 58).
13. Scope of OHV, grazing, and vegetation management: Use of forest resources and OHV use of designated routes is consistent with the long-term protection of the area’s natural, archaeological, and scenic resources (KRSMA MP p. 58).
14. Management focus to balance recreation with maintaining natural environment: All resource conditions, social conditions, and management activities reflect the characteristics described for opportunity class II and the objectives for this zone (KRSMA MP p. 58).

8. The South Fork Zone is actually within the Kings South Fork Wild and Scenic River corridor, but lies within the boundaries of KRSMA.

Standard/Guideline
<i>Standards for Converse Zone</i>
15. Campsite consistency with opportunity class I: Campsites are small and temporary. No facilities are provided. Effects are not evident to the visitor. Campsites are >100 feet apart and are fewer than two per 320 acres (KRSMA MP p. 59).
16. Human developments: No large developments are permitted, and small developments are temporary or subordinate to the environmental setting (KRSMA MP p. 59).
17. Few encounters between travelers: Extremely low probability of meeting other parties or forest users during low-use periods (<25 percent chance), a possible encounter with other recreationists on the National Recreation Trail and the Yucca Point Trail (25 to 50 percent chance) (KRSMA MP p. 59).
18. Management emphasizes maintaining natural environment: All resource conditions, social conditions and management activities reflect the characteristics described for opportunity class I and the objectives for this zone (KRSMA MP p. 59).
<i>Standards for Boole Zone</i>
19. Campsite consistency with opportunity class II: Campsites are small and temporary. Some facilities may be provided. Effects from recreation activities may be evident to the visitor. Campsites are greater than 50 feet apart and are fewer than five per 320 acres (KRSMA MP p. 60).
20. Few encounters between travelers: A low probability of meeting other parties or forest users during low-use periods (less than 50 percent chance), a possible encounter with other recreationists along the Boole Tree Trail (25 to 50 percent chance) (KRSMA MP p. 60).
21. Scope of OHV, grazing, and vegetation management: Use of forest resources and OHV use of designated routes is consistent with the long-term protection of the area's natural, archaeological, and scenic resources (KRSMA MP p. 60).
<i>Standards for Kings River Corridor Zone (Portion Within the Monument)</i>
22. Dead and down material: Ten tons per acre of dead and down material should be available for wildlife and recreational campfire building (KRSMA MP p. 61).
23. Human developments: Not more than five developments per a 320-acre area. Developments include structures and facilities for recreation and non-recreation activities (KRSMA MP p. 61).
24. Vandalism effects to visuals: No more than three new occurrences of graffiti vandalism or defacing of natural features located anywhere within the zone per year (KRSMA MP p. 61).
25. Dispersed campsites: No more than five sites within a quarter-mile length of the river corridor. Dispersed site locations should not affect the experience of other campers (KRSMA MP p. 61).
26. Group camping (encourage use outside SMA/WSR corridor): No more than five declined requests for group camping. The existing accommodations for group camping should meet user needs (KRSMA MP p. 62).
27. Few encounters between travelers: Fifty percent probability of no more than five encounters with other parties (KRSMA MP p. 62).
28. Conflicts between users: No more than five reported or otherwise documented conflicts between different types of users (e.g. anglers and rafters) (KRSMA MP p. 62).
29. Public safety: No more than four accidents per year within the zone, with attention to rafting incidents. Accidents are incidents where there is either an incident report filed by a forest officer or a forest visitor requires medical attention (KRSMA MP p. 62).
30. Public parking that protects resource and provides public safety: Public parking space should be provided at a level that protects the resource and provides for public safety and comfort. Visitors should find adequate parking at trailheads, raft put-ins, and raft take-outs.
31. Congestion at launch site: Rafting groups do not wait longer than 60 minutes to launch (KRSMA MP p. 63).
32. Groups encountered on river per day: Maximum of 17 parties per day (KRSMA MP p. 63).

Standard/Guideline
Research Natural Areas
33. Protect and manage South Mountaineer Creek, a potential research natural area, as if it was already established, pending its final establishment or release by the Chief of the Forest Service.
Botanical Areas
34. Manage the Freeman Creek Grove as a botanical area.
35. There shall be no logging and no motorized vehicle use by the public anywhere in the Freeman Creek Botanical Area.

Monitoring and Evaluation

Monitoring and evaluation are integral parts of the adaptive management cycle that will provide a framework to guide future management decisions and actions. Monitoring and evaluation activities in the Monument are closely linked to the adaptive management strategy in the 2001 SNFPA. Adaptive management is the process of continually adjusting management in response to new information, knowledge, or technologies. The Monument Plan monitoring process responds to specific requirements of the 1976 National Forest Management Act that must be met on a forest-wide basis, and the need to monitor forest management on a forest-wide basis. This monitoring plan also responds to Advisory XVIII from the Scientific Advisory Board which recommends that the Forest Service “strive for an on-site research and monitoring presence” (The Scientific Advisory Board 2003, Advisory XVIII).

Adaptive management is the foundation for planning and management. Forest plans need to be dynamic to account for changing resource conditions, resulting from large-scale wildfires, climate change, or listing of additional species under the Endangered Species Act, and new information and science, such as results from scientific study and monitoring.

Monitoring requirements are found in all three parts of the Monument Monitoring Plan. Part 1 monitoring is focused on measuring movement toward desired conditions over the long term. Part 2 monitoring documents individual program accomplishments and is reported annually. Finally, Part 3 monitoring measures a randomly selected sample of projects and ongoing activities and evaluates how well project implementation follows Monument Plan direction. All three parts use an adaptive management approach

designed to lead to continuous improvement in management of the Monument.

Types of Monitoring

The tables in this section include monitoring or inventory program areas or projects, monitoring questions, associated performance measures, and the frequency of reporting (annual or other time period). They also document the source, or who is expected to conduct the monitoring. Most of the monitoring will be conducted by the Sequoia National Forest (SQF), sometimes engaging the Pacific Southwest Region (RO), or another regional entity or program (such as the Pacific Southwest Research Station (PSW)), for consultation and assistance as needed and as resources are available.

The types of monitoring are:

- Implementation monitoring:** Determines if the management strategy (strategies, objectives, and standards and guidelines) is implemented as designed and in compliance with the Monument Plan. Implementation monitoring answers the question: “Were the management activities to protect the objects of interest and their ecosystems accomplished as specified in the Monument Plan?”
- Effectiveness monitoring:** Determines if the management strategy (strategies, objectives, and standards and guidelines) is effective in moving the Monument toward desired conditions. This type of monitoring provides a better understanding of how ecosystem components, structures, and processes have responded to the management strategy and answers the question: “Did the management strategy actually work to move

Monument resources closer to their desired conditions?”

- **Validation monitoring:** Determines whether the initial data and assumptions used in development of the Monument Plan and its management strategy are correct, or if there is a better way to meet forest planning regulations, policies, goals, strategies, and objectives. Validation monitoring is generally done only when implementation or effectiveness monitoring results suggest that a given practice may not have been implemented properly or was not effective in achieving expected outcomes. Validation monitoring is usually conducted by researchers in scientific studies or analyses.
- **Status and trend monitoring of ecosystem conditions and management activities:** Assesses important biological, physical, and sociocultural conditions, to gauge whether desired conditions are being achieved and provide early warning of unanticipated effects from management activities evaluated at a large scale. Baseline data are required before status and trend monitoring can occur. Baseline can be considered a component of implementation monitoring, while status and trend can be considered a component of effectiveness monitoring.

Part 1 Monitoring

Monitoring and evaluation provide knowledge and information to keep the Monument Plan viable. Appropriate selection of indicators, and monitoring and evaluation of key results, helps the Forest Service determine if the desired conditions identified in the Monument Plan are being met. Monitoring and evaluation also help the Forest Service determine if there should be changes to strategies, objectives, standards and guidelines, or monitoring methods.

Monitoring and evaluation processes begin by identifying key questions Forest Service managers need to answer about Monument Plan implementation. Understanding the questions help to identify information needs, data collection designs, and the tools needed to turn data into information and knowledge. Managers must also have a clear understanding of baseline conditions (current resource condition at the time of signing the ROD) versus desired conditions and the type of evaluation that

will help determine if movement towards desired conditions is occurring.

Monitoring and evaluation will answer the following key questions:

- Has the Sequoia National Forest taken actions to protect the objects of interest and restore their ecosystems?
- Has on-the-ground management in the Monument maintained or made progress toward the desired conditions?
- How are baseline conditions changing in response to changing climate and climate-related processes (e.g., wildfire)?
- What changes are needed to account for unanticipated changes in conditions?

The Part 1 Monitoring Summary presented in the following table focuses on evaluating the broad aspects of plan implementation. Most importantly, this monitoring includes elements for protecting the objects of interest identified in the Proclamation, including:

- The naturally-occurring giant sequoia groves and their associated ecosystems, individual giant trees, rare and endemic plant species such as the Springville clarkia, and other species listed as threatened or endangered by the Endangered Species Act (ESA), or sensitive by the Forest Service.
- The ecosystems and outstanding landscapes that surround the giant sequoia groves.
- The diverse array of rare animal species, including the Pacific fisher, the great gray owl, the American marten, the northern goshawk, the peregrine falcon, the California spotted owl, the California condor, several rare amphibians, the western pond turtle, and other species listed as threatened or endangered by the ESA, or sensitive by the Forest Service.
- The paleontological resources in meadow sediments and other sources that have recorded ecological changes in such markers as fire regimes, volcanism, vegetation, and climate.
- The limestone caverns and other geologic features, including granite domes, spires, geothermally-

produced hot springs and soda springs, and glacial and river-carved gorges.

- Cultural resources, both historic and prehistoric, which provide a record of human adaptation to the landscape, and land use patterns that have shaped ecosystems.

Cultural resources are monitored based on law, regulation, and policy. Most monitoring takes place based on site-specific project needs and are developed through the process codified in the National Historic Preservation Act (NHPA) in consultation with the State Historic Preservation Officer and Advisor Council on Historic Preservation. Monitoring is based on the potential to affect historic properties listed and/or potentially eligible for listing on the National Register of Historic Places. Standard

protection and mitigation measures, and monitoring of those measures, can be found in the *First Amended Regional Programmatic Agreement Among the U.S.D.A. Forest Service, Pacific Southwest Region, California State Historic Preservation Officer, and Advisory Council on Historic Preservation Regarding the Process for Compliance with Section 106 of the National Historic Preservation Act for Undertakings on the National Forests of the Pacific Southwest Region (2001) (Regional PA)*, the *Programmatic Agreement Among the U.S.D.A. Forest Service, Pacific Southwest Region, California State Historic Preservation Officer, and Advisory Council on Historic Preservation Regarding the Identification, Evaluation, and Treatment of Historic Properties managed by the National forests of the Sierra Nevada, California (1996)*.

Table 47 Part 1 Monitoring Summary

Monitoring or Inventory Program or Project	Monitoring Question	Performance Measures	Type of Monitoring	Frequency of Reporting and Source
Air Quality				
Air quality conditions	What is the trend of air quality conditions associated with prescribed fire and wildfire?	Chemical constituents of atmospheric aerosols.	Status and Trend	Ongoing Committee for Interagency Monitoring for Protected Visual Environments (IMPROVE), SQF
Climate Change				
Climate change trend assessments	What are the trends in temperature in the Monument and neighboring southern Sierra Nevada?	Mean, mean maximum, and mean minimum annual temperature based on Western Regional Climate Center database.	Status and Trend	1-2 years Regional Ecology Program
	What are the trends in precipitation in the Monument and neighboring southern Sierra Nevada?	Mean and variance annual precipitation based on Western Regional Climate Center database.	Status and Trend	1-2 years Regional Ecology Program
	What are the emerging trends in climate-driven processes (wildfire, hydrology, vegetation) in the Monument and surrounding Sierra Nevada?	Associated trends in climate-driven processes based on science literature review.	Status and Trend	1-2 years Regional Ecology Program

Part 3—Design Criteria

Monitoring or Inventory Program or Project	Monitoring Question	Performance Measures	Type of Monitoring	Frequency of Reporting and Source
Ecosystem Analysis				
Assessment of watershed condition	Have Monument landscapes been analyzed to identify opportunities for site specific environmental analysis including reduction of risks and hazards associated with wildfire; opportunities for ecological restoration; program and budget development; and priorities for cultural, social and economic ecological needs?	# of landscape analyses (hydrologic unit code [HUC] 6th-field) completed.	Status and Trend	Within 5 years of ROD, as new science/ information available. SQF
	Was current distribution of geologically unstable lands identified in landscape analysis?	# of landscape analyses (HUC 6th-field) completed that identified this.	Status and Trend	Within 5 years of ROD, as new science/ information available. SQF
Assessment of watershed condition: stream channel discharge and geometry relationships	What are the current distribution, status and location of flooding and discharge relationships of channels?	Channel geometry, discharge relationships.	Status and Trend	Ongoing, in response to flood events. SQF
Assessment of watershed condition: stream bank erosion rates	What are the background stream bank erosion rates?	Stream bank erosion.	Status and Trend	Ongoing SQF
Assessment of watershed condition: stream channel discharge and geometry relationships	Are discharge and channel geometry relationships established?	Channel geometry, discharge relationships at the new HUC scale.	Status and Trend	Ongoing SQF
	Were the areas with a history of flooding identified in landscape analysis?	Review the watershed condition assessment data.	Status and Trend	In response to flood events. SQF
Assessment of watershed condition: areas of special concern	Did the landscape analysis identify areas of special concern, raise awareness of conditions, and result in mitigation/ design modification/ protection/action?	# of completed landscape analyses at the 6th-field HUC level.	Status and Trend	Before site-specific project analysis SQF

Monitoring or Inventory Program or Project	Monitoring Question	Performance Measures	Type of Monitoring	Frequency of Reporting and Source
Stream bank erosion rates	Have background stream channel erosion rates changed as a result of natural processes (including fire) or management actions?	Stream bank erosion.	Status and Trend	After site-specific project or disturbance SQF
Stream channel discharge and geometry relationships	Are discharge and channel geometry relationships for the 5th-field HUC accurate at the 6th-field HUC?	Compare 5th-field HUC stream channel discharge and geometry data with 6th-field HUC data.	Validation	After disturbance SQF
Stream bank erosion rates	Are discharge and channel geometry relationships for the 5th-field HUC accurate at the 6th-field HUC?	Compare 5th-field HUC erosion rates with 6th-field HUC rates.	Validation	After disturbance SQF
Meadow ecosystems	What is the ecological condition of meadow ecosystems?	Change in wetland rating, vegetation rating, and ecological status per R5 monitoring protocol.	Status and Trend	5-10 years RO
	Is there a change in the total area occupied by montane meadows?	Total area of montane meadows by class (dry/wet meadow with/without woody vegetation).	Status and Trend	5-10 years RO
Aquatic Resources				
Aquatic resource and habitat condition	What is the current state of aquatic resources and habitat conditions?	Stream condition, aquatic macro invertebrates.	Status and Trend	Every 5 years after plots established SQF
	Did stream condition inventory data show changes in aquatic resource and habitat conditions following large-scale disturbances (such as fires and floods)?	Analysis of stream condition inventories for change.	Status and Trend	After disturbances SQF

Part 3—Design Criteria

Monitoring or Inventory Program or Project	Monitoring Question	Performance Measures	Type of Monitoring	Frequency of Reporting and Source
	Are stream systems capable of moving sediment without causing channel alterations and damage to riparian and aquatic habitat?	Changes in stability and indicators of disequilibrium.	Effectiveness	After disturbances SQF
Aquatic resource and habitat condition	What is the current state of aquatic resources and habitat conditions within the watershed?	Inventories and/or analysis of aquatic resources.	Status and Trend	After disturbances SQF
Protection from flooding	Did the assumptions used to formulate flooding potential on life, property, and natural resources help reduce or avoid damage from flooding?	Evaluate assumptions for flooding events.	Effectiveness	After disturbances SQF
Geological Resources				
Cave condition	Were cave resources considered in landscape analyses?	# of caves inventoried.	Status and Trend	Ongoing SQF
Cultural Resources				
Cultural resource condition	Have changes occurred in the condition of, integrity of, and disturbance risk to cultural resources?	Site condition.	Status and Trend	Every 3-5 years SQF
Fire And Fuels				
Fire susceptibility	Have we identified areas of fire susceptibility that need to be treated to move toward desired conditions?	Ground fuels, ladder fuels, crown bulk density, and tree density. Acres in need of treatment as determined in landscape analysis.	Effectiveness	Within 5 years of ROD, as new science/information available SQF
	Have we treated areas of high fire susceptibility to move toward desired conditions?	Acres of fire susceptibility meeting desired conditions.	Status and Trend	Every 5 years SQF

Monitoring or Inventory Program or Project	Monitoring Question	Performance Measures	Type of Monitoring	Frequency of Reporting and Source
Fire behavior and fire regime	Are the fire and fuel strategies and treatments effective in achieving the desired fire behavior and fire regimes within vegetation types or series?	Severity, rate of spread, fire type, intensity, frequency, spotting, crown bulk density, tree density	Effectiveness	Every 5 years or following major wildfire events SQF
Fuel loading	How effective are fuel treatments (prescribed burning, hand and mechanical treatments) and managed wildfire in achieving desired fuel loading at treatment sites?	Surface fuels, ladder fuels, crown loading.	Effectiveness	Every 5 years or following major wildfire events SQF
Groundwater				
Groundwater	What is the relationship between groundwater, giant sequoia grove ecology, and meadow ecosystems?	Groundwater fluctuation and soil moisture levels as measured by lysimeters and piezometers in groves and meadows.	Status and Trend	Ongoing SQF
Invasive Plants/Noxious Weeds				
Noxious weed inventory	What is the distribution of noxious weeds?	Miles of roads and trails inventoried, distribution of noxious weeds.	Status and Trend	Within 3 years of ROD, as new science/information available SQF
Socioeconomics				
Socioeconomics	How are communities changing in response to social and economic conditions?	Change in demographics.	Status and Trend	Every 10 years RO
	What is the capacity for economic development in gateway communities?	Housing, employment by industry, index of industrial specialization, place of work, source of income.	Status and Trend	Every 10 years RO

Part 3—Design Criteria

Monitoring or Inventory Program or Project	Monitoring Question	Performance Measures	Type of Monitoring	Frequency of Reporting and Source
Vegetation				
Giant sequoia groves	What is the size and age of giant sequoias? What is the number of larger or monarch giant sequoias?	Dbh, age, height, crown ratio, and crown height (common stand exams).	Status and Trend	1-10 years SQF
	What are the age and species composition of vegetation?	Age, # by species (common stand exams).	Status and Trend	10 years SQF
	What is the status of ladder fuels and fuel loading?	Height by seral stage and species, amount of down woody material (common stand exams).	Status and Trend	5-10 years SQF
	What is the status of giant sequoia regeneration?	# of seedlings and saplings (common stand exams).	Status and Trend	5-10 years SQF
	What is the change in structure in giant sequoia groves and is it trending toward desired conditions?	Dbh, age, height, crown ratio, and crown height (common stand exams).	Effectiveness/ Status and Trend	2-5 years SQF
	What is the change in age and species composition and is it trending toward desired conditions?	Age, # by species (common stand exams).	Effectiveness/ Status and Trend	2-5 years SQF
	What is the change in ladder fuels and fuel loading and is it trending toward desired conditions?	Height by seral stage and species, amount of down woody material (common stand exams).	Effectiveness/ Status and Trend	2-5 years SQF
	What is the change in status of giant sequoia regeneration and is it trending toward desired conditions?	# of seedlings and saplings (common stand exams).	Effectiveness/ Status and Trend	2-5 years SQF
General Monument outside groves	What are the age and species composition of vegetation?	Age, # by species (common stand exams).	Status and Trend	10 years SQF

Monitoring or Inventory Program or Project	Monitoring Question	Performance Measures	Type of Monitoring	Frequency of Reporting and Source
	What is the status of ladder fuels and fuel loading?	Height by seral stage and species, amount of down woody material (common stand exams).	Status and Trend	10 years SQF
	What is the status of regeneration?	# of seedlings and saplings (common stand exams).	Status and Trend	10 years SQF
	What is the change in age and species composition and is it trending toward desired conditions?	Age, # by species (common stand exams), R5 CALVEG, CWHR.	Effectiveness/ Status and Trend	5-10 years SQF, RSL
	What is the change in ladder fuels and fuel loading and is it trending toward desired conditions?	Height by seral stage and species, amount of down woody material (common stand exams, FIA plots).	Effectiveness/ Status and Trend	10 years SQF
	What is the change in status of regeneration and is it trending toward desired conditions?	# of seedlings and saplings (common stand exams, FIA plots).	Effectiveness/ Status and Trend	10 years SQF
Deforestation by wildfire	How many acres of forest and woodlands have been deforested as a result of wildfire?	Acres of forest and woodland vegetation (by type, including giant sequoia groves) in deforested condition following wildfire.	Status and Trend	Annually for fires exceeding 1,000 acres on National Forest System lands RO
Carbon stocks	What are the baseline carbon stocks?	Total aboveground carbon measured at FIA plots.	Status and Trend	Within 5 years of ROD, as new science/information available FIA Program
Forest health	What is the extent of tree mortality and injury?	Total number of dead trees and total number of acres with recent tree mortality or injury, by forest type and injury agent, based on aerial surveys.	Status and Trend	Annually Forest Health Protection, State and Private Forestry

Part 3—Design Criteria

Monitoring or Inventory Program or Project	Monitoring Question	Performance Measures	Type of Monitoring	Frequency of Reporting and Source
Canopy gap analysis	Are gaps in the canopy large or frequent enough to meet desired conditions for regeneration of giant sequoias and pines?	Canopy cover, acres of canopy gaps (common stand exams).	Effectiveness/ Status and Trend	10-20 years SQF
Wildlife				
Wildlife protection	Do management strategies provide for the protection of wildlife habitat?	Occupancy, habitat conditions.	Effectiveness	Ongoing SQF
Terrestrial wildlife	Are wildlife species adequately protected?	Occupancy, habitat conditions.	Effectiveness	Within 5 years of ROD, as new science/ information available SQF
	What is the status of the Pacific fisher population?	Detection rates.	Status and Trend	Ongoing RO
	What is the status of the willow flycatcher population and its suitable habitat?	Occupancy, habitat conditions at the five historically occupied sites.	Status and Trend	Every 4 years SQF
Threatened, Endangered, and Sensitive (TES) Plants				
TES Plants	What is the status of known populations of and suitable habitat for TES species (specifically Springville Clarkia)?	Plant survey	Status and Trend	Annually SQF
	Is there any change in the status, location, and suitable habitat for TES species (specifically Springville Clarkia)?	Analysis of population demographics.	Status and Trend	Annually SQF

Part 2 Monitoring

Monitoring in Part 2 of the Monument Monitoring Plan is focused on program implementation including inventory. The Sequoia National Forest currently uses performance measures for tracking program accomplishments (see the following table). The current system is expected to be replaced by a performance accountability system integrating

annual budgets with programs of work (WorkPlan) and linking these to tracking of activities designed to implement the National Strategic Plan through the Forest Activities Tracking System (FACTS) or subsequent reporting system.

Actual performance is tracked over time through annual documentation of accomplishments. The Forest Supervisor and other managers will display

Table 48 Part 2 Monitoring Summary

Accomplishment	Units	Measuring Frequency (years)	Report Period (years)
Wildlife habitat improvement	Acres	1	1
Fish habitat improvement	Miles of stream, acres of lake	1	1
Watershed improvement	Acres	1	1
Meadow restoration	Acres	1	1
Fuel treatment	Acres (WUI & non-WUI)	1	1
Vegetation management for ecological restoration and maintenance	Acres	1	1
Cultural resources managed to standard	Number of sites	1	1
Recreation use	PAOT days ⁽¹⁾	1	1
Trail maintenance	Miles	1	1
Rangeland improvement	Acres	1	1
Grazing allotments administered to standard	Acres	1	1
Road maintenance	Miles	1	1

1. PAOT Days=persons at one time days

monitoring results in evaluation reports after a management review and determine if any changes are needed in plan guidance. These data will no longer be reported in the annual report agreed to in the 1990 Mediated Settlement Agreement (1990 MSA), but rather will be reported in an annual monitoring and evaluation report (Forest Plan Monitoring Report). This report will include both site-specific project monitoring and forest-wide (programmatic level) monitoring.

Inventory is a continuous effort. As funding is available, priority inventories are implemented and reported through various resource information systems, such as the Natural Resources Information System (NRIS) and the Infrastructure database (INFRA). Periodic evaluation of inventory data is used to explore trends in resource conditions over time. Annual forest plan monitoring reports will document when there is a need to change the Monument Plan in response to changing trends in resource conditions.

General Budget History

The Sequoia National Forest’s budget allocations increased from 1995 to 2009. Analysis of budget history indicates that practically all of the increase was for hazardous fuels reduction and fire pre-

suppression (preparedness) to implement the National Fire Plan. Some other program budgets increased at roughly the rate of inflation.

For the Sequoia National Forest, the budget allocations for the last three fiscal years (2009-2011) were:

Program	FY2009	FY2010	FY2011
	(in million \$)		
Fire/fuels management	16.15	15.75	15.19
Recreation/facilities/trails	2.18	1.81	1.59
Natural resources	2.32	1.93	2.28
Total	20.65	19.49	19.06

Based on the current trend, budgets for the Sequoia National Forest are predicted to decline in the first years of plan implementation.

Part 3 Monitoring

Monitoring for Part 3 of the Monument Monitoring Plan is conducted at the project level. Monitoring and evaluation will be conducted to determine how well the management direction for the Monument (strategies, objectives, and standards and guidelines) has been followed, and how closely standards and guidelines have been applied.

The monitoring plan presented in the following table consists of those special activities that focus on evaluating the broad aspects of plan implementation associated with projects and ongoing activities.

Other monitoring consists of reports, reviews, and records that occur as a routine part of forest management. Actions not duplicated in this plan include such things as: individual and annual fire reports; management attainment reports; annual vegetation management action plans, reviews, and reports; budget and financial management documents; recreation information management reports and databases; visitor use monitoring; special uses administration; environmental analysis reports; activity reviews; audits; and general management reviews.

Table 49 Part 3 Monitoring Summary

Monitoring or Inventory Program or Project	Monitoring Question	Performance Measures	Type of Monitoring	Frequency of Reporting and Source
Air Quality				
Air quality	Did smoke from prescribed fire contribute to public nuisance or health standard violations?	Micrograms/cubic meter of PM ₁₀ ; visual observations.	Status and Trend	Bi-annually SQF
Aquatic Resources				
Water quality	Were best management practices (BMPs) identified for all activities in the Monument?	% implementation monitoring of BMPs.	Implementation	Ongoing SQF
	Were BMPs monitored on all projects?	% effectiveness monitoring of BMPs.	Implementation	After site-specific projects SQF
	Were BMP prescriptions effective in protecting soil and water resources of the watersheds?	SCI surveys.	Effectiveness	After site-specific projects SQF
Cultural Resources				
Cultural resource condition	Have cultural resources been identified and located in project areas and managed wildfire locations?	# of sites inventoried.	Status and Trend	Ongoing SQF
	Were cultural resources affected by forest use and management activities?	# of sites affected.	Status and Trend	Every 3-5 years SQF

Monitoring or Inventory Program or Project	Monitoring Question	Performance Measures	Type of Monitoring	Frequency of Reporting and Source
Fire And Fuels				
Fire threat and severity	Have we identified areas in the WUI and general Monument that need treatment to reduce the threat and severity of wildfire?	Ground fuels, ladder fuels, crown bulk density, and tree density. Acres in need of treatment as determined in landscape analysis.	Status and Trend	Within 5 years of ROD, as new science/information available SQF
	Do fire and fuel treatments in the WUI and general Monument reduce the threat and severity of wildfire?	Treatment characteristics (location and type), ground fuels, ladder fuels, crown bulk density, and tree density.	Status and Trend	Every 5 years SQF
Prescribed burns and managed wildfire	Are prescribed burns and managed wildfire being used to meet or move toward desired conditions?	Acres of prescribed burns, acres of managed wildfire.	Status and Trend	Annually SQF
Geological Resources				
Cave condition	Are caves affected by management activities?	# of caves affected by management activities.	Status and Trend	Every 3 years SQF
	Are gates secured and cave features protected in Church and Boyden Caves?	Condition of Church and Boyden Caves.	Status and Trend	Annually SQF
Invasive Plants/Noxious Weeds				
Noxious weed inventory	Are noxious weed populations responding to the management strategies?	Noxious weed populations and distribution.	Status and Trend	Ongoing SQF
Range				
Utilization standards: lower westside hardwoods	Did grazing utilization follow standards and guidelines for residual dry matter (RDM)?	Indices of RDM.	Status and Trend	Annually, at end of grazing season SQF
	Are utilization standards for oaks being met?	% livestock browse on annual growth of hardwood seedlings and advanced regeneration.	Status and Trend	Annually, at end of grazing season SQF

Part 3—Design Criteria

Monitoring or Inventory Program or Project	Monitoring Question	Performance Measures	Type of Monitoring	Frequency of Reporting and Source
	Did grazing utilization maintain at least 60% cover in annual grasslands?	% ground cover.	Status and Trend	Annually, at end of grazing season SQF
	Are grazing utilization standards for oak regeneration meeting desired conditions?	Grazing utilization of oak regeneration.	Status and Trend	Every 5 years SQF
Utilization standards: aquatic, meadow, and riparian ecosystems	Are grazing utilization standards being met for meadow vegetation?	Ecological status of meadows per R5 monitoring protocol.	Status and Trend	Annually, at end of grazing season SQF
Ecological status: range of natural variability	Has the range of natural variability been determined in the Monument?	Riparian conditions.	Status and Trend	Annually SQF
Ecological status: stream banks	Are stream banks maintained at desired conditions?	% stream bank alteration.	Status and Trend	Annually SQF
Ecological status: aquatic, meadow, and riparian ecosystems	What is the ecological status and trend of key aquatic, meadow, and riparian ecosystems within allotments?	Change in wetland rating, vegetation rating, riparian condition, stream condition, and ecological status per R5 monitoring protocol.	Status and Trend	Every 5 years SQF
Ecological status: special aquatic features	Are special aquatic features protected from grazing/	Riparian vegetation within allotments.	Status and Trend	Annually SQF
Ecological status: woody riparian shrubs	Are grazing utilization standards being met for woody riparian shrubs?	% browsed mature riparian shrubs and individual seedlings.	Status and Trend	Annually SQF
Soils				
Assessment of soil quality	Were soil quality standards identified for management activities?	Soil quality standards documented in project record.	Status and Trend	Ongoing SQF
	Was soil condition assessed? Were soil erosion risk and ground cover needs evaluated?	Soil condition assessment. ⁽¹⁾	Status and Trend	Ongoing SQF

Monitoring or Inventory Program or Project	Monitoring Question	Performance Measures	Type of Monitoring	Frequency of Reporting and Source
	Was the risk of soil displacement evaluated?			
	Are aquic soil moisture conditions appropriate for local conditions?			
	Was soil compaction risk assessed considering both existing and potential conditions?			
	After management activity, was ground cover maintained, soil displacement minimized, aquic soil moisture maintained (where appropriate), and compaction minimized?	Soil condition assessment. ⁽¹⁾	Status and Trend	Ongoing SQF
	Have chemical applications been applied in a manner consistent with soil quality standards?	Chemical application rates.	Status and Trend	Ongoing SQF

1. See the following Soil Indicator Condition Exhibit.

Table 50 Soil Indicator Condition Exhibit

Soil Function	Indicator	Soil Indicator Condition		
		Functioning Properly Meets Desired Condition	Functioning at Risk	Impaired Function
Productivity for plant growth	Organic matter on mineral soil	The size, amount, and distribution of organic matter present are within the range for the ecological type and normal fire return interval. Soil cover level is 50% or greater, composed mostly of fine organic matter, and well distributed.	Fine organic matter covers 30-49% of the soil surface in the area.	Fine organic matter covers less than 30% of the soil surface in the area.
	Soil organic matter (humus) in mineral soil	The thickness and typical color of the topsoil present is within the range of characteristics for the soil type and is distributed normally. Minor areas of displacement may have occurred but will not affect the productivity for the desired plant species.	Topsoil has been lost, displaced, or removed to a depth and in an area large enough to affect productivity for the desired plant species, but is restricted to localized areas.	Topsoil has been lost, displaced, or removed to a depth and in an area large enough to affect productivity for the desired plant species over a major portion of the area.

Soil Function	Indicator	Soil Indicator Condition		
		Functioning Properly Meets Desired Condition	Functioning at Risk	Impaired Function
	Erosion prevention	An adequate level of soil cover is present and signs of erosion are not visible or extremely minor in degree and extent. No gully erosion is present. Erosion control measures are effective.	In localized portions of the area signs of erosion such as pedestals, sheet, rill, and/or gully erosion is visible. Erosion control measures are ineffective and actions may be needed to prevent further soil loss.	Soil cover is inadequate throughout the area and pedestals, sheet, rill, and/or gully erosion is widespread. Erosion control measures are needed immediately to prevent further soil loss.
	Aquic soil moisture regime	Water-dependent species composition comprises the majority (70-90%) of plant species present. A variety of species and age classes are represented. Growth is vigorous and ground continuous. Deep dense root mat is inferred (Pfankuch 1978).	Water-dependent plant species cover from 50-70%, and lack of vigor is evident in some individuals or species. Seedling reproduction is nil (Pfankuch 1978).	Less than 50% of the ground is covered and root mass is discontinuous and shallow. Water-dependent species are diminished in present (Pfankuch 1978).
Hydrologic function	Soil cover	Soil cover is present in amount and distribution to protect the soil surface from raindrop impact and runoff energy. Soil Cover includes mostly smaller diameter organic material (< 3 inches), rock fragments (> ¾ inch) and low growing vegetation (grass, forbs, shrub canopy within 3 feet of the soil surface). Any sign of overland flow and erosion is minor in degree and extent.	Soil cover is lacking and there is evidence of overland flow and erosion in localized portions of the area.	Soil cover is lacking and there is widespread evidence of overland flow and erosion in the area.
	Infiltration and permeability capacity	Visually, soil structure and macro-porosity in the top 10 inches are relatively unchanged from natural condition for the soil type, and no signs of erosion or overland flow are present or extremely minor in degree and extent. Infiltration and permeability capacity of the soil is sufficient for the local climate.	In portions of the area being assessed, overland flow and signs of erosion are visible, indicating the infiltration and permeability capacity of the soil has been exceeded for the local climate.	Overland flow and signs of erosion are widespread throughout the area, indicating the infiltration and permeability capacity of the soil has been exceeded for the local climate.

Part 4—Transportation Plan

The Proclamation (Clinton 2000) states:

The management plan shall contain a transportation plan for the monument that provides for visitor enjoyment and understanding about the scientific and historic objects in the monument, consistent with their protection. For the purposes of protecting the objects included in the monument, motorized vehicle use will be permitted only on designated roads, and non-motorized mechanized vehicle use will be permitted only on designated roads and trails, except for emergency or authorized administrative purposes or to provide access for persons with disabilities. No new roads or trails will be authorized within the monument except to further the purposes of the monument. Prior to the issuance of the management plan, existing roads and trails may be closed or altered to protect the objects of interest in the monument, and motorized vehicle use will be permitted on trails until but not after December 31, 2000 (Clinton 2000, p. 24098).

Current management of the Monument complies with the Proclamation direction to limit motorized vehicles to designated roads, with the exception of Trails 27E04 and 27E05 in the Kings River Special Management Area (KRSMA). Designated road maps were published in 2001 and with the 2003 Monument Plan Final EIS, and motor vehicle use maps (MVUMs) were published in 2008 to reflect this management of the transportation system in the Monument (the two MVUMs covering the Monument are included in the Map Packet for this Monument Plan).

Because the Giant Sequoia National Monument Plan is a programmatic level decision and does not directly authorize any project level site specific actions, the transportation plan also does not make any site specific changes to the transportation system. Instead it provides a framework by which to manage the transportation system and make future decisions concerning changes to it that support the management intent of the Monument Plan. Changes to the existing transportation system will only be made after appropriate site-specific environmental analysis.

Desired Conditions

Roads are safe and fully-maintained to minimize adverse resource effects while providing public and administrative access to National Forest System lands and facilities within the Monument. The road system is properly sized to provide needed access to the objects of interest for their proper care, protection, and management, as well as visitor enjoyment of the Monument. Roads that are no longer needed have been decommissioned to restore natural drainage and vegetation, or converted to other uses.

Strategies and Objectives for the Transportation System

The transportation system will provide high levels of access for public and management use, consistent with protection and restoration of the Monument. New roads may be constructed to meet management goals, such as to provide access to new recreation facilities, to provide access to the objects of interest, to provide access to new administrative sites, to replace roads that have unacceptable resource effects, or to provide access for scientific research.

Strategies

1. Size and maintain the road system to minimize adverse resource effects, while providing appropriate public and administrative access to National Forest System lands and facilities in the Monument.
2. Promote aquatic organism passage at road stream crossings where needed.
3. Maintain roads with effective road drainage and erosion controls to conserve existing soil and to reduce effects to adjacent riparian and aquatic systems.
4. Complete 6th-field watershed analysis, and review the transportation system in the Monument using forest-scale travel analysis to inform future opportunities for changes in road status, including changes in maintenance level, decommissioning, or conversion to trails.

Part 4—Transportation Plan

5. Consult with local tribal governments and Native Americans to provide for transportation and access needs, including access to culturally important sites and resources for use by Native Americans.
6. Coordinate transportation planning, management, and road decommissioning with Sequoia and Kings Canyon National Parks; other federal, state, and county agencies; and the Tule River Indian Tribe, to reduce traffic congestion and safety hazards, especially along major travelways.
7. Partner with state and local agencies to operate and maintain roads for four-season use where appropriate.
8. Provide parking facilities to meet projected use, as determined through site-specific project analysis.
9. Base proposals for new roads on the need to provide access for recreation opportunities, other public use, or management activities, as appropriate to the purposes of the Monument.
10. Convert roads to trails or other uses, or decommission roads not needed to meet management objectives.
11. Emphasize opportunities for creating loop roads where feasible and appropriate.
12. Provide and maintain regulatory, warning, directional, and information signing on roads for travelers' use.
13. Manage the road system to allow:
 - a. Both highway legal use and off-highway vehicle (OHV) use on designated roads.
 - b. Over-snow vehicles (OSV) use on designated roads.
 - c. Non-motorized mechanized vehicles (such as bicycles) on designated roads and trails.

Objectives

1. Within 2 years, complete travel analysis to determine the minimum necessary Transportation System (Subpart A of the Travel Management rule, 36 CFR 212.5) for the Monument.
2. Within 2 years, complete a Monument-wide watershed improvement needs inventory (WINI) to identify adverse effects to watersheds from roads.

3. During the life of the Monument Plan, establish a sustainable and desirable off-highway vehicle (OHV) and over-snow (OSV) route system (on the existing road system), including loop opportunities where feasible and appropriate.

Current Transportation System

Road System

The road system in the Monument consists of approximately 822 miles of classified roads, ranging from single-lane dirt roads to paved-double lane roads. The miles of road by their assigned maintenance level (ML) are shown in the following table. These data are derived from the forest corporate tabular database for infrastructure (INFRA). The *operational* maintenance level is the maintenance level currently assigned to a road, considering today's needs, road condition, budget constraints, and environmental concerns; in other words, it defines the level to which the road is currently being maintained. The *objective* maintenance level is the desired maintenance level to be assigned at a future date, considering future road management objectives, traffic needs, budget constraints, and environmental concerns. The objective maintenance level may be the same as, or higher or lower than, the operational maintenance level. Both maintenance levels may change in the future.

Table 51 Miles of Roads in the Monument by Maintenance Level

Maintenance Levels (ML)	Objective ML	Operational ML
1 (closed to motorized traffic)	313	71
2 (managed for high-clearance vehicles)	255	515
3 (low standard, passenger vehicle traffic)	134	127
4 (moderate standard, passenger vehicle traffic)	69	72
5 (two-lane paved, passenger vehicle traffic)	51	37
Total miles	822	822

Each road has a functional designation as an arterial, collector, or local road, as shown in the following table (data from INFRA database). Arterial roads (typically maintenance levels 4-5) are the main roads that traverse the forest and connect to major state highways or county roads. They are paved and designed for higher-speed travel. Collector roads (typically maintenance level 3) connect the arterial roads to local roads and balance access needs with construction and maintenance costs. Local roads (typically maintenance levels 1-2) are at the ends of collector roads, tend to be low standard, and serve a small land area.

Table 52 Miles of Road by Functional Class

Functional Class	Objective Class	Operational Class
Arterial	120	109
Collector	134	127
Local	568	586
Total miles	822	822

Approximately 265 miles of road are designated for OHV use in the northern portion of the Monument. The southern portion has OHV recreation opportunities on approximately 250 miles of unpaved, designated roads.

The road system in the Monument that is currently designated for motorized use is shown on the MVUMs for the Hume Lake and Western Divide Ranger Districts (see the map packet). These maps are published as required by the Travel Management Rule; they display the entire districts, including land outside the Monument, because they cannot be published for areas smaller than an administrative unit.

Trail System

The trail system within the Monument currently consists of approximately 196 miles of system trails, including about 12 miles of the Summit National Recreation Trail. Twelve developed trailheads offer parking, information, and restrooms; and 10 other trailheads provide only parking for trail users.

Some trail facilities are located within the current administrative boundaries of giant sequoia groves. Two interpretive trails, the Indian Basin Trail and

the Trail of 100 Giants (about 2.5 miles combined) and seven trailheads (Chicago Stump, Boole Tree, Cherry Gap, Evans, Little Boulder, Freeman Creek, and Needles) are located in groves. OHV use is still allowed on about 3.8 miles of trail in the Kings River Special Management Area, which was designated under Public Law 100-150. This public law takes precedence over the Proclamation (Clinton 2000). This motorized use is shown on the MVUM for the Hume Lake Ranger District (see the map packet).

Snowmobile Use

In the northern portion of the Monument, 39 miles of marked routes are available for over-snow vehicles, 21 of which are groomed; an additional 50 miles of unmarked roadbeds are open to snowmobiles. These routes offer opportunities for all levels of riding experience, from easy, groomed routes to very difficult, deep-powder routes. Facilities include four winter trailheads with parking, two of which have restrooms. Montecito Lake Resort, authorized under special use permit, offers 20 miles of groomed trails used exclusively by cross-country skiers.

The southern portion of the Monument features approximately 114 miles of primary groomed and marked roads, 68 miles of secondary groomed and marked roads, a warming hut located north of the junction of State Highway 190 and the Western Divide Highway, and three trailheads. Cross-country skiing commonly occurs along the groomed snowmobile routes with some adventure trail-breaking occurring off-road. Volunteers commonly mark approximately four miles of ungroomed ski trails in the Quaking Aspen/Ponderosa and Parker Pass areas.

Transportation System Management

Maintenance Strategy

Currently available funding is insufficient to fully maintain the existing road system. The following strategies will be used to prioritize needed maintenance and to improve the ability to complete all needed maintenance:

1. Public safety and natural resource protection would be the highest priorities for maintenance.

Part 4—Transportation Plan

2. Maintenance levels 3 through 5 roads would be higher priority for maintenance than maintenance levels 1 and 2 roads, due to the higher potential loss of investment, generally higher traffic volumes and speeds, and resulting safety risks and liabilities.
3. Submit appropriate projects for maintenance, reconstruction, or rehabilitation funding when opportunities are available (agency funding, state grants, partnerships, and other sources).
4. Seek additional sources of funding to reduce the maintenance backlog and keep the road system in acceptable condition. Potential sources include Federal Highway Trust Fund funding through the national transportation bill and appropriated funding specifically for specially designated areas such as monuments.
5. Partner with user groups, permittees, and other entities to accomplish needed road maintenance.
6. Consider reducing the assigned maintenance level of individual roads based on access needs, resource risks, and costs to improve the ability to maintain the entire road system.
7. Consider closing roads not currently needed for resource management activities or significant recreation access to reduce maintenance costs, while retaining the road prism for expected future access needs.
8. Consider opportunities to reduce the size of the road system by decommissioning individual roads or converting them to non-motorized trails.

Road System Changes

Changes to the road system may include actions such as changes of assigned maintenance levels for individual roads, construction of new roads, removal of roads from the system through decommissioning, and conversion of roads to trails. New roads could be constructed to meet management goals to provide access to new recreation facilities or opportunities; to provide access to the objects of interest; to provide access to administrative sites (ranger stations, work centers, etc.); to replace roads producing unacceptable resource effects; or to provide access for scientific research.

The priority for road retention emphasizes retaining road access for public use and for management activities similar to current access levels. For public access, emphasis should be on maintaining roads to recreation sites, concentrated use areas used for dispersed recreation, sites authorized by special use permits, and private land. The road system will also be available for recreation driving and for off-highway vehicle use on roads designated for such use. For management access, emphasis should be on ecosystem restoration and fire protection.

Roads with high risks for causing unacceptable effects to natural resources should be repaired, relocated, closed, or decommissioned to reduce effects. Road decommissioning should focus on roads producing unacceptable effects where repair or relocation are unreasonable, roads where the potential for resource effects and high maintenance costs outweigh the need for access for resource management or recreation, and any unauthorized motorized routes remaining after the road system was designated in 2000, as required by the Proclamation.

Changes to the road system will be made through the travel analysis process and site-specific project analysis. The objective of travel analysis is to provide decisionmakers with critical information to develop road systems that are safe and responsive to public needs and desires, are affordable and efficiently managed, have minimal negative ecological effects on the land, and are in balance with available funding for needed management actions. Travel analysis is required to inform decisions related to identification of the minimum road system needed for safe and efficient travel and for administration, utilization, and protection of National Forest System lands; and to inform decisions related to the designation of roads for motor vehicle use.

An analysis of the entire designated road system in the Monument was completed in 2003, following the roads analysis process (RAP), which was agency direction at the time. The process was very similar to the current travel analysis direction, except that it was expanded to include motorized trails and areas. Since motorized travel is limited to designated roads in the Monument, the RAP completed in 2003 is still a valid tool to help inform decisions about the road system.

In the completed RAP, evaluation criteria were created based on specific topic areas described in the FS-643 miscellaneous report (agency direction at the time). These topics included ecosystem functions and processes; aquatic, riparian zones, and water quality; terrestrial wildlife; economics; minerals and range management, water production, and special forest products; special use permits; general public transportation; administrative uses; protection; road-related and unroaded recreation; passive use values; social issues; and civil rights and environmental justice. Similar criteria would be appropriate to evaluate the need for future changes in the trail system.

The evaluation criteria developed for the Monument RAP were:

- Aquatic risk factors
 1. Geologic hazard
 2. Stream crossing density
 3. Riparian zone–stream proximity
- Terrestrial risk factors
 1. Heritage resources
 2. Road density effects on wildlife habitat
 3. Scenic resources
- Access factors
 1. Private/non-recreation public access
 2. Public access (recreation)
 3. Administrative site access
 4. Vegetation management
 5. Fire protection
- Social factors
 1. Lifestyle, attitudes, beliefs and values
 2. Economics

The aquatic and terrestrial risk factors were combined into a consolidated “risk equivalent” with a rating of low, medium, or high. The access and social factors were also combined into a consolidated “need equivalent” with a rating of low, medium, or high.

This resulted in a combined potential risk versus need equivalent rating for each road in the system. The nine potential combined ratings are displayed in the following table.

Table 53 Potential Risk and Need Equivalent Combination Ratings

	Need Equivalent		
Risk equivalent	Low/low	Low/moderate	Low/high
	Moderate/low	Moderate/moderate	Moderate/high
	High/low	High/moderate	High/high

Based on the combined rating, roads could be considered for the following changes:

1. Roads rarely used by the public or Forest Service (i.e., low need equivalent) and with high risk equivalent could be considered for decommissioning.
2. Roads rarely used by the public or Forest Service (i.e., low need equivalent) and with low resource risk equivalent could be considered for decommissioning or storm-proofing.
3. Roads accessing vegetation that has reached desired condition may be evaluated for decommissioning or storm-proofing.
4. Roads frequently used by the public or Forest Service (i.e., moderate to high need equivalent) with moderate to high resource risk equivalent could be evaluated to relocate portions of the roads away from resource risks or create alternate access routes with fewer resource risks.
5. Where two or more roads access the same area, traffic could be directed onto the more stable road and the less stable road(s) could be decommissioned.

The complete RAP can be found in Appendix A of the transportation report and listing of roads is in Appendix B of the transportation report, which is available in the project file at the Supervisor’s Office of the Sequoia National Forest.

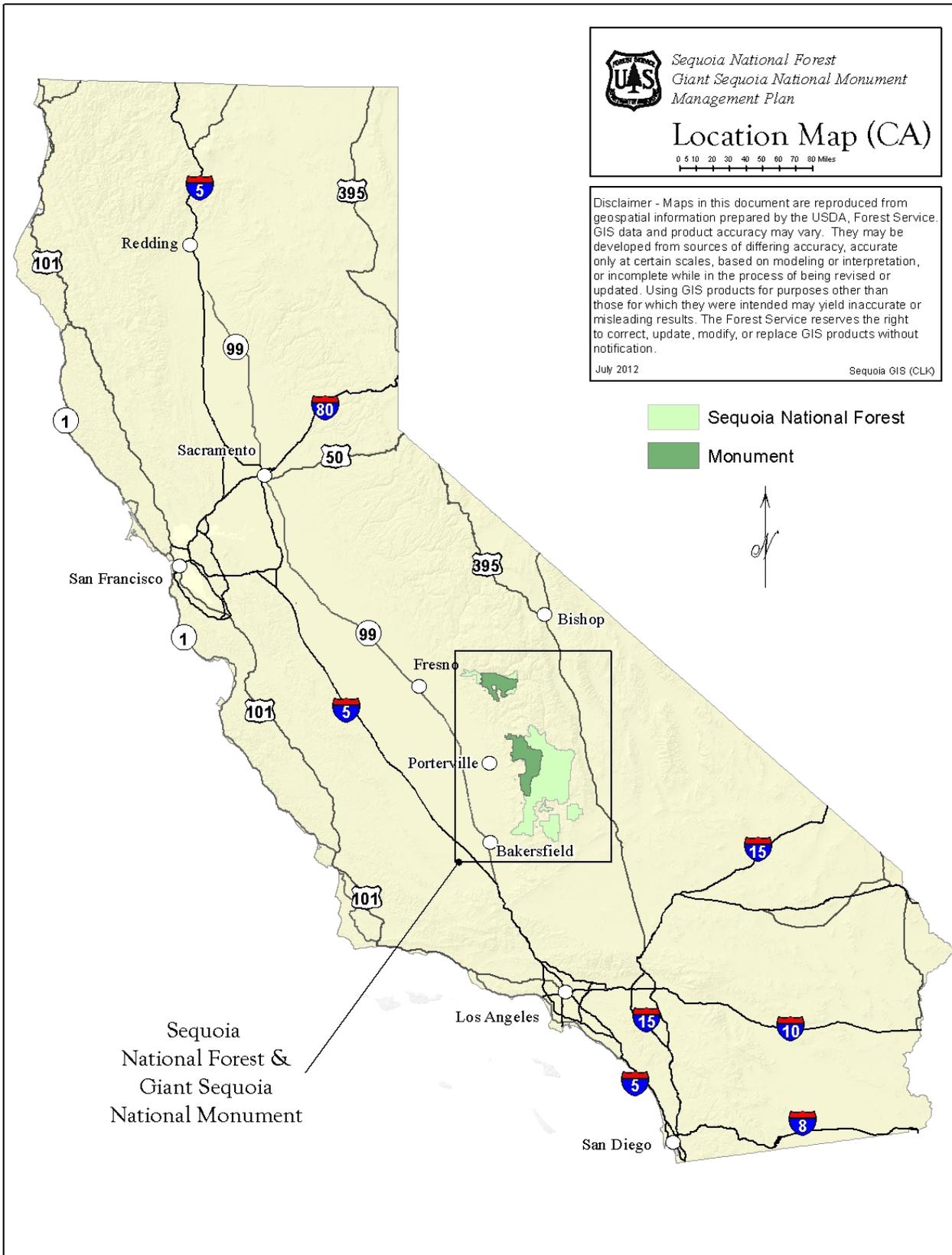
Part 4—Transportation Plan

Some topic areas are best evaluated at the site-specific scale, rather than at the forest or Monument-wide scale. Some data can become diluted at the broad scale, so that areas appear to have low effects, whereas negative effects can be seen and evaluated more readily at the site-specific scale. The Monument RAP was conducted at a broad, forest scale to identify overall trends. Travel analysis can be conducted at multiple scales, as required to adequately inform proposed actions.

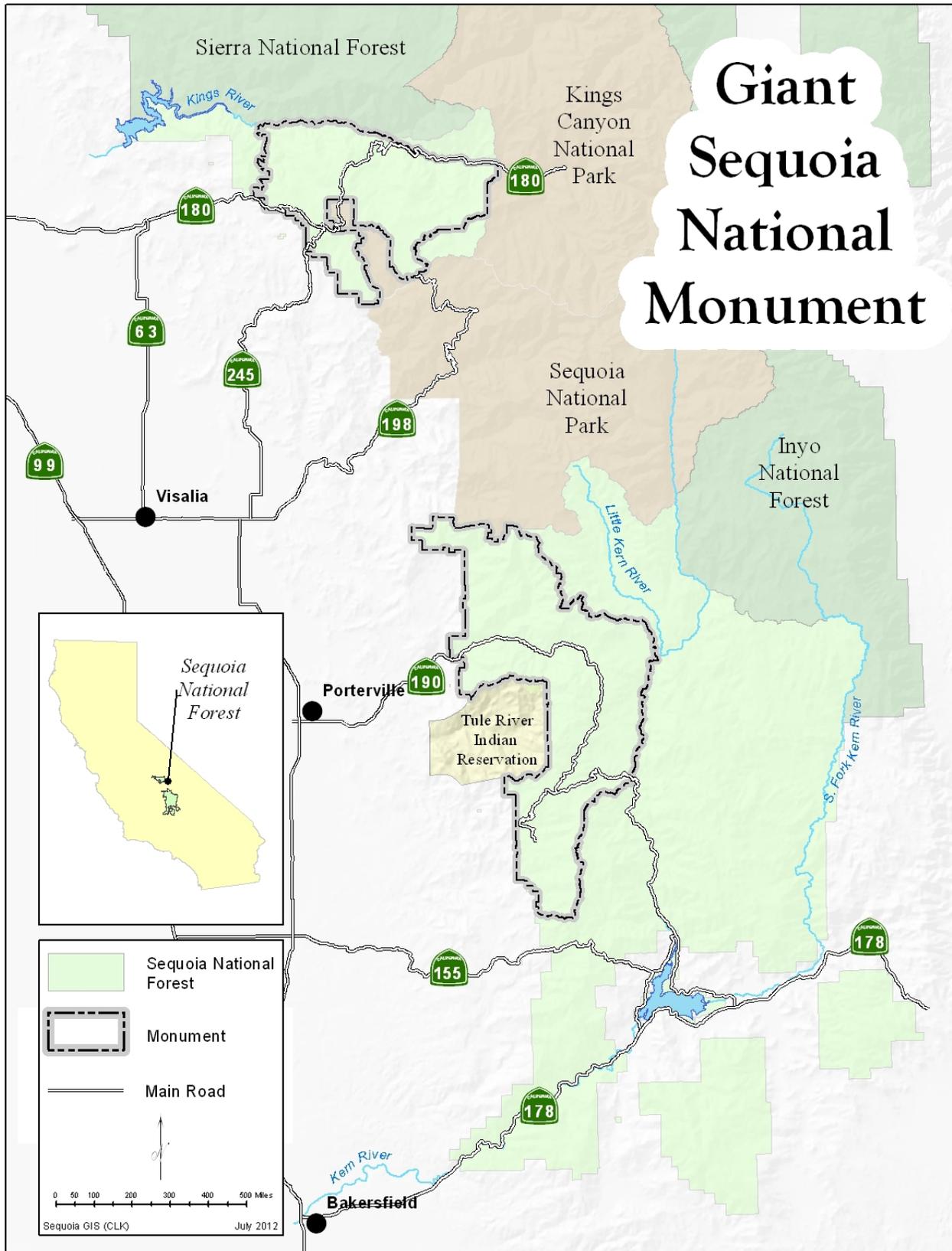
When changes are proposed to the road system to further the purposes of the Monument, the decisions made will be informed by travel analysis and site-specific project analysis. Evaluation criteria for the travel analysis will include criteria similar to the criteria described for the RAP, as well as other criteria appropriate to the specific proposed action.

Appendices

Appendix A—Location Map (California)



Appendix B—Location Map (Local)



Appendix C—Giant Sequoia Groves List

Sequoia Groves and Grove Complexes

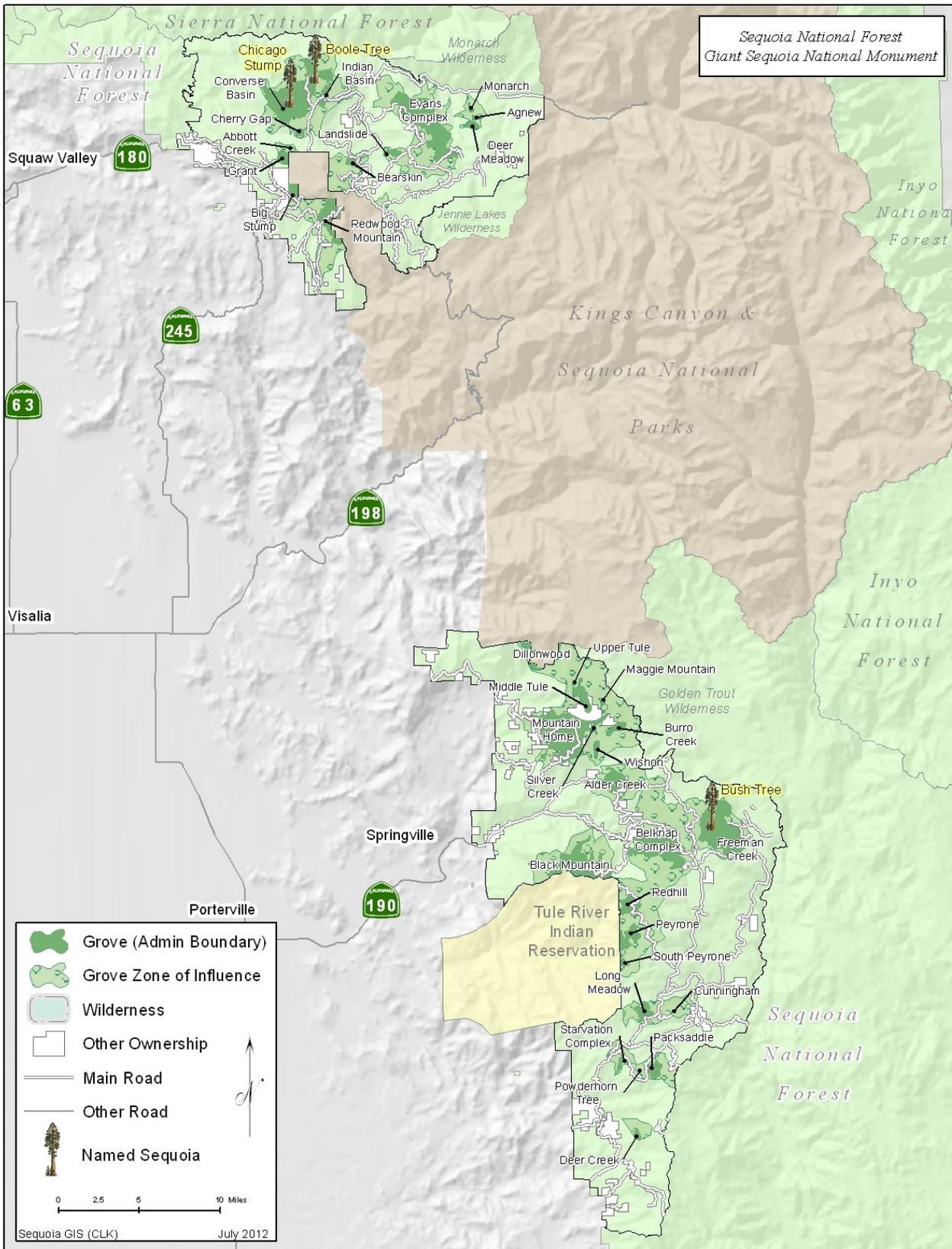
Grove or Complex Name ⁽¹⁾	Date Inventoried	Acres in Sequoia National Forest	Groves within Grove Complex
Northern Portion			
1. Abbott Creek	October 2009	25	
2. Agnew	October 2009	43	
3. Bearskin	October 2009	187	
4. Big Stump	January 2002	431	
5. Cherry Gap	October 1999	170	
6. Converse Basin	November 1998	4,666	
7. Deer Meadow	October 2009	168	
8. Evans Complex	October 2009	4,256	Evans, Boulder, Little Boulder, Lockwood, Kennedy, Horseshoe Bend
9. Grant	January 2002	292	
10. Indian Basin	April 2004	448	
11. Landslide	October 1999	226	
12. Monarch	October 2009	54	
13. Redwood Mountain	September 2003	1,036	
Southern Portion			
14. Alder Creek	February 2004	409	
15. Belknap Complex	October 2009	3,084	Belknap, Wheel Meadow, McIntyre, Carr Wilson
16. Black Mountain	February 2004	2,614	
17. Burro Creek	October 2009	278	
18. Cunningham	October 2009	32	
19. Deer Creek	November 1998	144	
20. Dillonwood	October 2009	373	
21. Freeman Creek	October 2009	4,192	
22. Long Meadow	November 1999	568	
23. Maggie Mountain	October 2009	64	
24. Middle Tule	October 2009	301	
25. Mountain Home	February 2004	1,295	
26. Packsaddle ⁽²⁾	March 2004	533	
27. Peyrone	February 2004	741	
28. Red Hill	February 2004	602	
29. Silver Creek	October 2009	108	
30. South Peyrone	October 2009	115	

1. Groves within close proximity to each other were identified as grove complexes during boundary mapping per the MSA.

2. The Packsaddle Grove includes the isolated Powderhorn Tree.

Grove or Complex Name ⁽¹⁾	Date Inventoried	Acres in Sequoia National Forest	Groves within Grove Complex
31. Starvation Complex	January 2000	182	Starvation Creek, Powderhorn (the grove, not the named tree)
32. Upper Tule	October 2009	22	
33. Wishon	October 2009	171	
Total Acres of Groves in Sequoia National Forest		27,830	

Appendix D—Giant Sequoia Groves Map



Appendix E—Partnership Strategy

Partnership Strategy for the Sequoia National Forest and Giant Sequoia National Monument

Partnerships in land stewardship reflect a growing and important trend: the joining of passion and resources by committed citizens, organizations, and government agencies to achieve social, economic, and ecological goals. The Forest Service has worked with partners throughout its 100-year history. But the problems of land management have grown more complex, and the needs of the public more varied. The American people today are voicing their strong desire to volunteer and participate in the stewardship of natural resources and in the decisions that affect their communities (National Partnership Office 2005, accessed on December 21, 2009 from <http://www.partnershipresourcecenter.org/resources/partnership-guide/>).

Creating a Partnership Culture

The Forest Supervisor on the Sequoia National Forest (forest) and Giant Sequoia National Monument (Monument) is responding to the needs of a varied public by empowering employees and communities of place, interest, and culture to create and sustain successful partnerships. The forest supervisor and forest staff have established the following partnership goals to accomplish the Forest Service mission and build a strong community of stewardship on the forest and Monument:

- Through partnership, sustain the health, diversity and productivity of the Sequoia National Forest and Giant Sequoia National Monument.
- Build community support for, and understanding of, the Sequoia National Forest and Giant Sequoia National Monument.
- Enhance opportunities to connect people to the land, especially in urban areas and of diverse cultures.
- Expand partnerships with other federal, state, and local government agencies, as well as associations, non-government organizations, and other

community groups, to leverage information and resources for mutual benefit.

- Foster partnerships dealing with science.
- Create more “citizen stewards” of the Sequoia National Forest and Giant Sequoia National Monument through volunteerism.
- Support the ongoing efforts of the Giant Sequoia National Monument Association.
- Develop new partnerships focused on management of the land (for example, tree planting, protection from wildfire, education campaign to reduce trash in forest).
- Build and enhance partnerships to protect tribal sites and interpret cultural assets.

Accomplishing these goals will require new and innovative methods as well as the continuation of ongoing successful partnership efforts. The purpose of this strategy is to outline an iterative process for building and sustaining a strong partnership culture for the forest and Monument. The strategy includes the following components: a method for determining the forest and Monument capacity for working in partnership; best practices for building new partnerships; and steps for ensuring effective outreach to nontraditional partners.

Forest and Monument Capacity for Working in Partnership

The National Partnership Office of the U.S. Forest Service has designed an assessment tool to help Forest Service units assess, sustain, and improve their abilities to work with partners in continuing the Forest Service’s long history of partnership and collaboration in land stewardship (see <http://www.partnershipresourcecenter.org>).

What Is the Partnership Capacity Assessment Tool?

The Partnership Capacity Assessment Tool is essentially a group exercise to reflect on experiences and attitudes about partnerships and collaboration. The tool asks the group to score itself on a series of questions about partnership opportunities, goals, resources, procedures, incentives, barriers, skills, and relationships. The group then uses these scores to

chart strengths, analyze positive and negative factors that contribute to partnership capacity, and identify actions to sustain and grow capacity.

Who Should Use the Assessment Tool?

The Sequoia National Forest in conjunction with communities of place, interest, and culture who care about the Giant Sequoia National Monument will benefit from the assessment. This tool is designed to generate open dialogue with partners and among staff. It is also a useful starting point for assessing current partnership abilities and discussing how to maintain strengths or address needs.

How Can the Assessment Tool Best Meet the Needs of the Monument?

The Assessment Tool provides the format for a community forum to assess partnership needs and develop priorities to meet those needs. Including partners in the process can help to promote dialogue and improve relationships. However, the tool is not intended to assess the feasibility of or develop plans for specific partnership opportunities.

How Long and Where Will the Assessment Take Place?

The community forum can expect to complete the assessment in one evening session (3 to 4 hours). The investment of time will pay off by helping forest staff and potential partners to systematically identify needs and actions to meet those needs. Trained facilitators and recorders will be used to keep the process moving smoothly.

Best Practices for Building New Partnerships

Partnerships can be thought of as a type of alliance, where the complex interaction of business and interpersonal activities are essential to successfully achieving mutually beneficial goals. Key characteristics of successful interpersonal relationships include trust, communication, perspective taking, rapport building, and commitment. Partnerships are known to yield better results under certain conditions (Mockler 1999, O'Neill n.d., Appendix 2) including:

- When each partner recognizes the need to have access to capabilities and competencies it cannot develop internally; and

- When a gradual approach is preferable in accessing resources, capabilities, and competencies (as opposed to faster mechanisms such as contracting).

Keeping these conditions in mind, the following iterative best practices are provided to assist the forest staff in the identification of new Monument partners:

1. Place the partnership within the long-term strategies of the Monument
 2. Define specific objectives of the partnership
 3. Choose partners
 4. Evaluate what to offer and what to receive in exchange
 5. Define opportunities
 6. Evaluate the effect on Monument stakeholders
 7. Evaluate negotiating capabilities
 8. Plan the integration
 9. Create the partnership
1. **Place the partnership within the long-term strategies of the Monument.** Strategic alliances respond to various long-term strategies of the Monument. For example, the *Interpretive Plan for the Sequoia National Forest and Giant Sequoia National Monument*, published in 2008, established a strategy for the forest's interpretive program, featuring the interpretation of the objects of interest, both natural and cultural. Interpretive services may be provided on-site or virtually. The specific interpretive products, services, and delivery methods are expected to evolve over time, in response to evolving technologies, visitor needs and demands, and available resources. Partnerships are important in the provision of interpretation, not only because of the extra resources they provide, but also because they help to enrich the information provided and help to develop a sense of stewardship in both the partners and recipients of interpretive services.
 2. **Define specific objectives of the partnership.** Three aspects of defining objectives are necessary for the success of the partnership:
 - a. As for any strategy, the objective should be compared with the forest and Monument's

available resources and capabilities and with those that could be used. The partnership should bridge the gap of existing resources and capabilities to achieve the objectives. The Assessment Tool can assist in identifying where these gaps occur.

- b. A clear consensus (internally) on why the Agency cannot reach particular goals on its own and why it must seek a partnership with an external organization rather than internal development or via procurement.
 - c. Knowing where the partnership generates advantages within the chain of value and clarifying why each partner cannot develop these advantages internally.
- 3. Choose partners.** According to Hill and Jones (1999), the right partner in an alliance must have three principal features:
- a. The partner must have the resources and capabilities to help the Monument achieve its strategic goals. It must bring to the partnership what is missing from the others and which they are seeking.
 - b. The partner must share its long-term goals for the partnership. Failure is inevitable if the goals are divergent.
 - c. The partner must not use the alliance to appropriate know-how, relationships with clients or suppliers, or technology without making contributions of equal strategic weight. Alliances are longer lasting and better when they are considered between partners with a reputation for trustworthiness.
- 4. Evaluate what to offer and what to receive in exchange.** Reciprocity is a key component of building trust. Each partner should evaluate which capabilities are critical to the partnership, and then decide what the Monument can offer to the others and what it can expect from them.
- 5. Define opportunities.** Knowing the value of the opportunities that can be achieved with the alliance is an essential guide in negotiation and subsequent management of the partnership itself. Beyond the opportunities, it is also important to examine the possible threats.

- 6. Evaluate the effect on Monument stakeholders.** A key question to consider is, “How will stakeholders react to the partnership?”
- 7. Evaluate negotiating capabilities.** A key question to consider here is, “What resources and capabilities can the partners realistically bring to the partnership?”
- 8. Plan the integration.** A partnership “business plan” should:
- a. Organize activities and functions
 - b. Define accounting procedures
 - c. Define procedures to resolve conflicts
 - d. Define the relationships between the partnership and the Monument
- 9. Create the partnership.** Flexibility is integral to sustaining an effective partnership. Whatever the form of the partnership, some principles apply:
- a. Each partner has its own goals that dictate the role of the partnership,
 - b. The role of the partnership changes as internal and external conditions evolve, and
 - c. The relationship between the partners is quite dynamic.

Steps for Ensuring Effective Outreach to Nontraditional Partners

The diversity of people using the Sequoia National Forest and Giant Sequoia National Monument will continue to increase, as the American population becomes more diverse and international visitors increase. The greatest growth is projected to be in Hispanic and Asian populations, and their use is projected to increase dramatically in the next 25 years. Interpretation and outreach methods designed to connect nontraditional users to the Monument need to communicate important resource issues, solicit commitment to conservation, and encourage appropriate behaviors. Use of the Monument by nontraditional user groups, especially Hispanics and Asians, is prevalent and growing.

To assure effective outreach occurs within this growing segment of potential Monument partners, metrics should be designed to monitor and evaluate success, adapting as necessary to continually broaden

the circle of involvement. The following steps may be considered, as appropriate, in developing innovative partnerships:

- Translation of major documents (or summaries thereof), provision of translators at meetings, or other efforts as appropriate to ensure that limited-English speakers gain understanding of potential partnership opportunities;
- Provision of opportunities for limited-English speakers to provide comments and actively engage in partnership opportunities;
- Provision of opportunities for public participation through means other than written communication, such as personal interviews or use of audio or video recording devices to capture oral comments;
- Use of different meeting sizes or formats, or variation on the type and number of media used, so that communications are tailored to the particular community or population;
- Use of locations and facilities that are local, convenient, and accessible to disabled individuals, low-income and minority communities, and Indian tribes; and
- Assistance to hearing-impaired or sight-impaired individuals when needed.

References

- Hill G.; Jones, G. 1999. Strategic management. Houghton Mifflin.
- Mockler, R.J. 1999. Multinational strategic alliances. Wiley.
- O'Neill, B. n.d. Brian O'Neills's 21 partnership success factors. San Francisco, CA: Golden Gate National Parks.
- U.S. Department of Agriculture [USDA], Forest Service, National Partnership Office. 2005. Partnership guide. <http://www.partnershipresourcecenter.org/resources/partnership-guide/>. (21 December 2009).
- U.S. Department of Agriculture [USDA], Forest Service, National Partnership Office. 2004. Partnership capacity assessment tool. Washington, DC.

Resources

<http://www.partnershipresourcecenter.org>. This website provides online resources to build vibrant partnerships and effective collaboration for the nation's forests, grasslands, and other special places. The website is a joint project of the National Forest Foundation and the U.S. Forest Service.

Spanish Colonial Research Center, University of New Mexico. The Center was established by the National Park Service in partnership with the university. The Center employs Spanish speakers from multiple Spanish-speaking countries and regions to assist in translating English into Spanish. English is translated into Spanish so that it makes sense to employees, and then it is back-translated into English to check that the original meaning is intact. Contact: Jerry Gurule and other staff members at (505)346-2890; fax: (505)277-4603; e-mail: clahr@unm.edu.

Appendix F—Recreation Planning

In addition to the recreation niche settings, recreation opportunity spectrum (ROS) classes, standards/guidelines, and strategies, the following paragraphs contain some considerations in planning for recreation opportunities in the future. Much of the information comes from the National Association of Recreation Resource Planners' "Principles of Recreation Resource Planning" (2009).

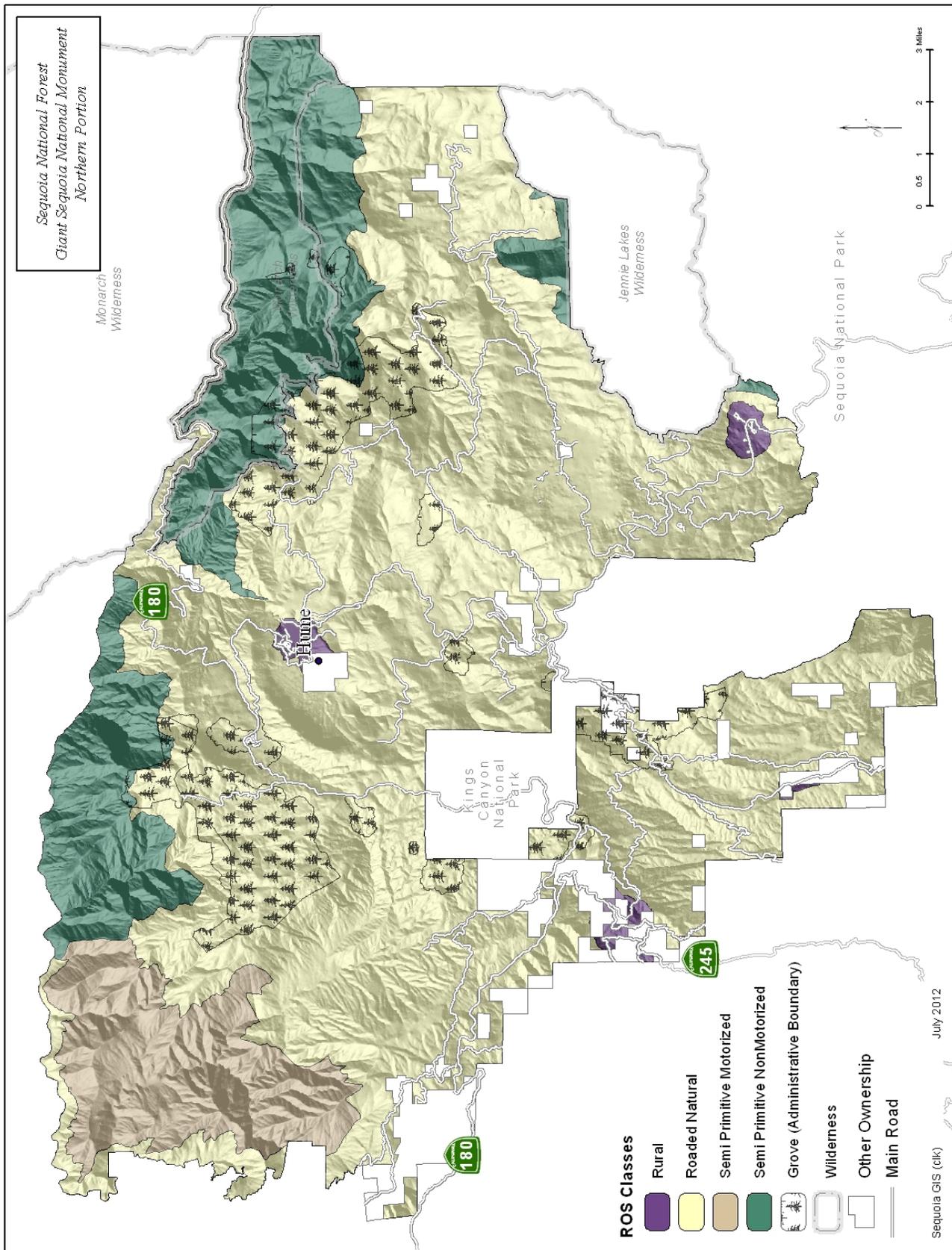
- Not all types and amounts of people or activities can be accommodated in a particular setting at one time. Recreation niche settings, which focus on the special values and resources of a setting within the larger spectrum of recreation opportunities, are expected to help guide what kinds of opportunities are provided where. ROS settings are expected to guide the type of development provided (amount of development, construction materials, type of access, concentration of use/social encounters, remoteness).
- Some recreation uses are not compatible with other uses. In determining what activities to provide and where, existing activities need to be considered. Strong preferences for specific recreation settings lead to competition for recreation resources among different user groups. Conflict may also be generated by how each user group perceives the others' actions and values. Potential social effects need to be minimized and mitigated.
- Site specific plans need to determine visitor capacity for the proposed use. Visitor capacity is the prescribed number or supply of available visitor opportunities to be accommodated in a specific location and specific time.
- Consider resource sustainability in recreation project planning. Recreation use needs to be integrated so as to harmonize with, protect, enhance, and sustain natural and cultural resources, including the objects of interest. Potential environmental effects need to be minimized and mitigated. Consider the kind of resource legacy that will be left to the next generation.
- Consider recreation stewardship opportunities in project planning. Site restoration projects are a

form of recreation for some people. Opportunities should be designed, managed, and interpreted so as to foster public appreciation, understanding, respect, behaviors, and partnerships that contribute to the stewardship of an area's natural and cultural resources and special values.

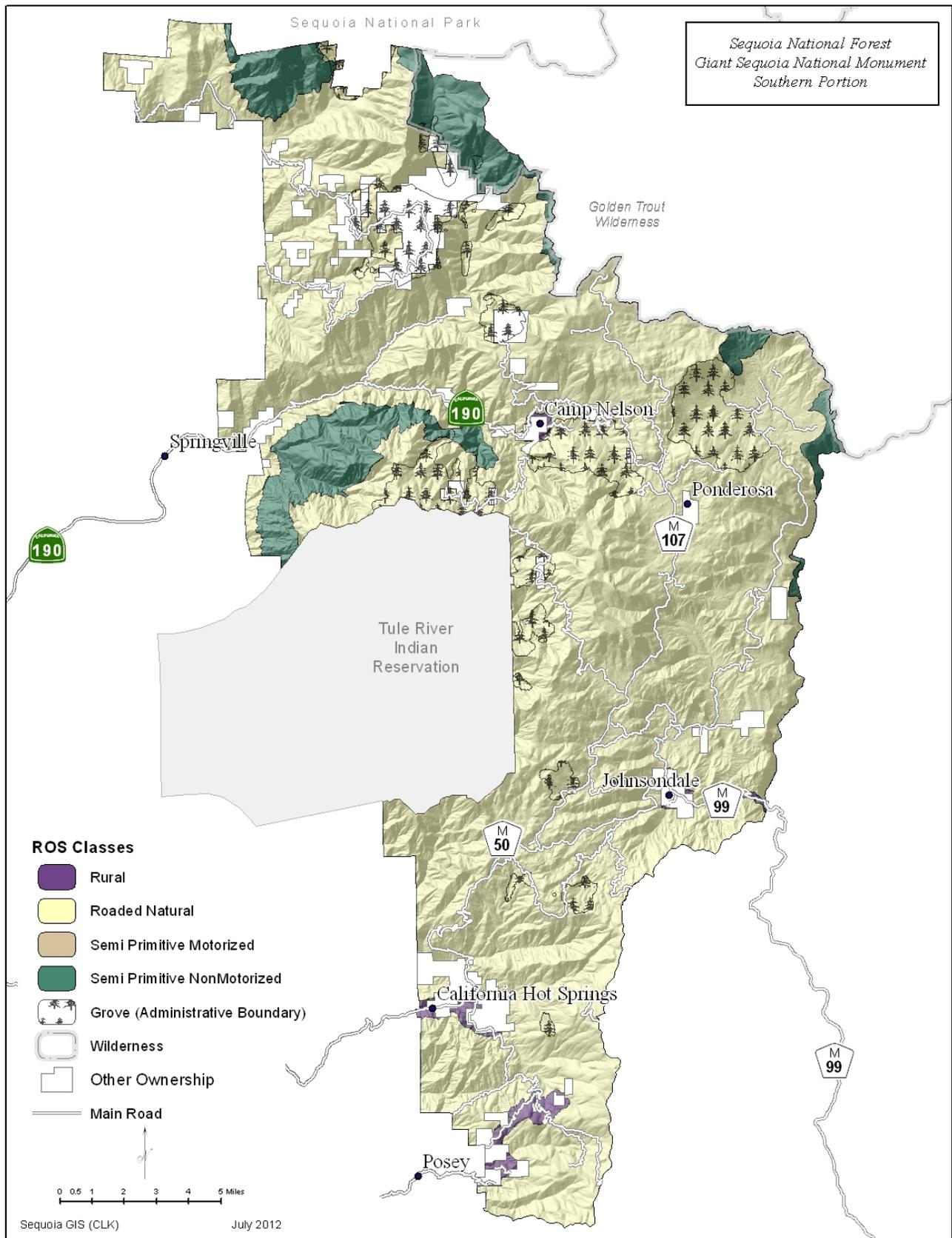
- Ensure that all people have an opportunity to enjoy the Monument without prejudice of race, ethnicity, age, wealth, gender, beliefs, or abilities.
- Ensure that the recreation opportunities which are provided are what the public truly wants, while also ensuring that the natural and cultural resources can support/sustain the use. Do not take the attitude of "if we build it, they will come," because they might not; resources are too scarce to waste them on developing recreation opportunities that will not be used or that will be used in a manner not intended (misused).
- Promote the environmental, human, and community wellness benefits that accrue from recreation participation, such as improved physical and mental health, child development, family cohesion, civility, social integration, economic stimulation, work productivity, resource stewardship, and a conservation ethic.

The following maps display the ROS classes for the Monument.

Map 4 Recreation Opportunity Spectrum Classes for the Northern Portion of the Monument

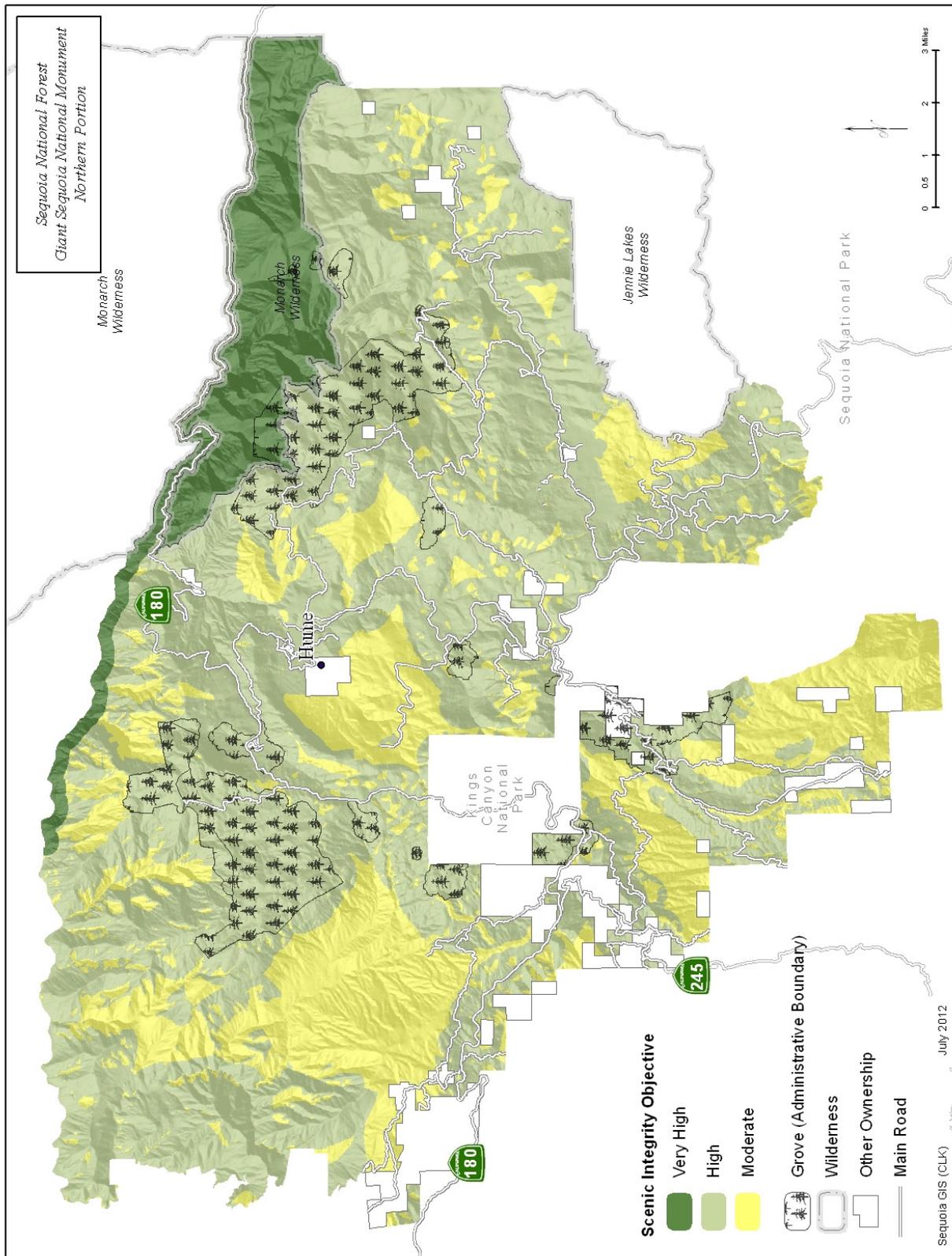


Map 5 Recreation Opportunity Spectrum Classes for the Southern Portion of the Monument

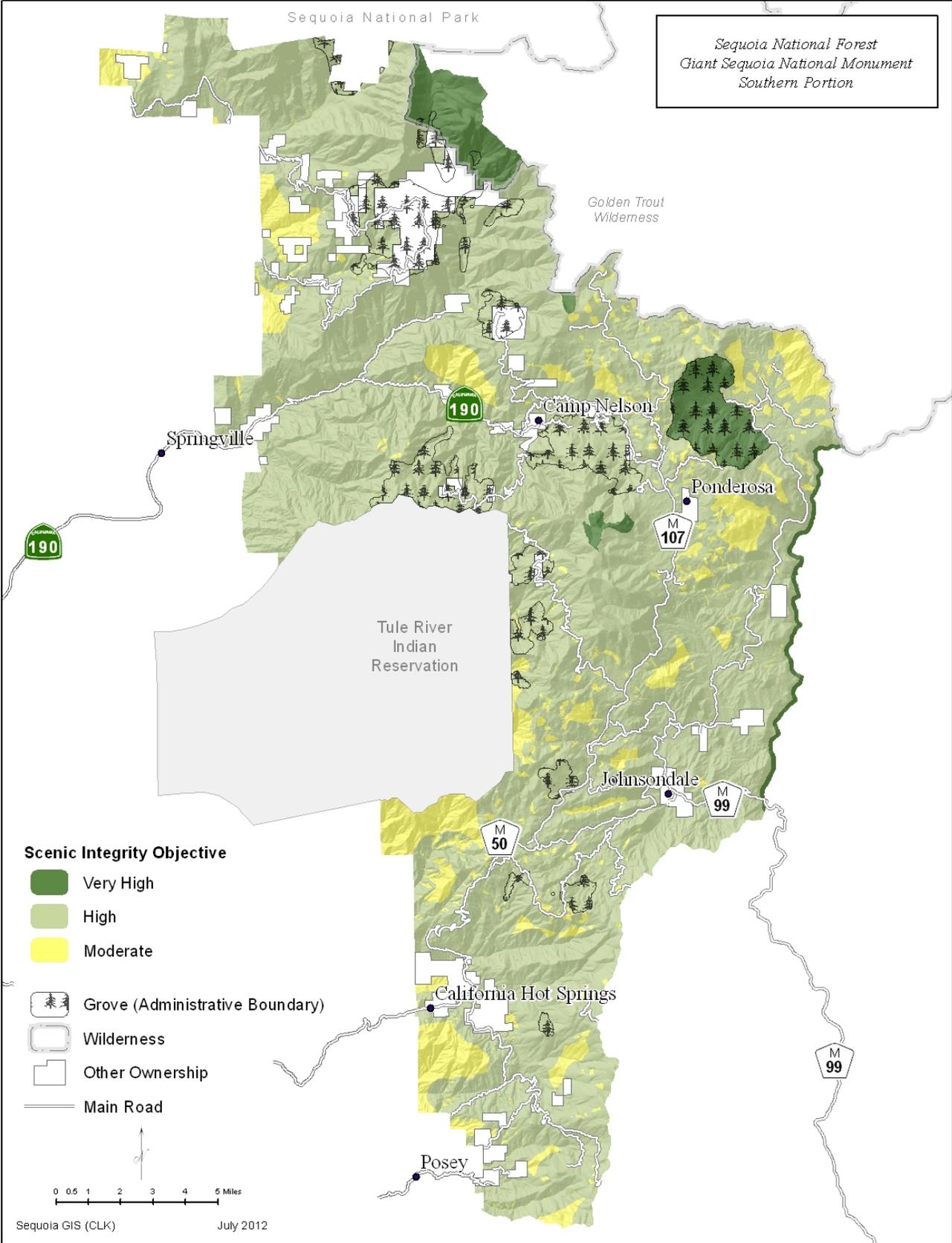


Appendix G—Scenic Integrity Objective Maps

Map 6 Scenic Integrity Objectives for the Northern Portion of the Monument

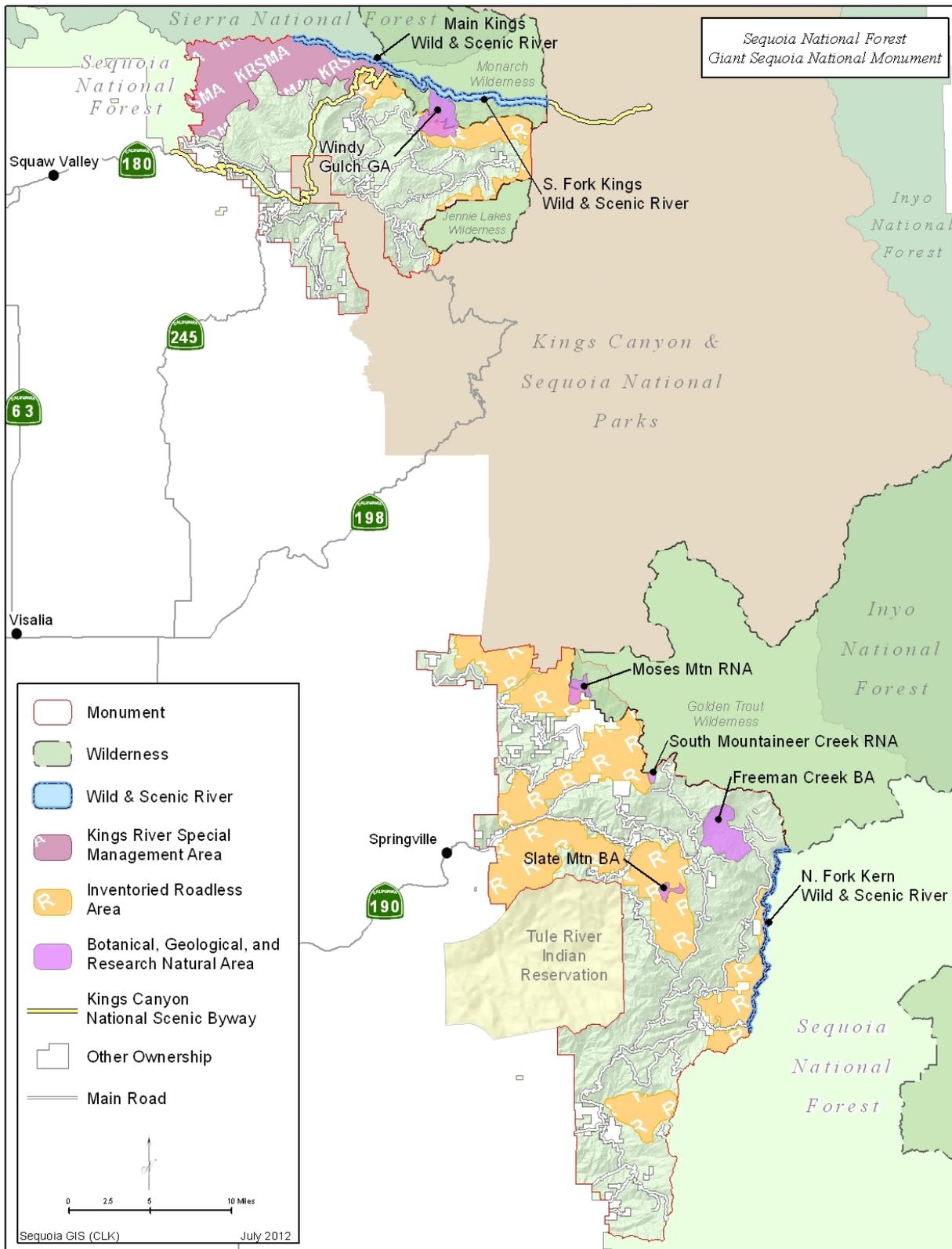


Map 7 Scenic Integrity Objectives for the Southern Portion of the Monument

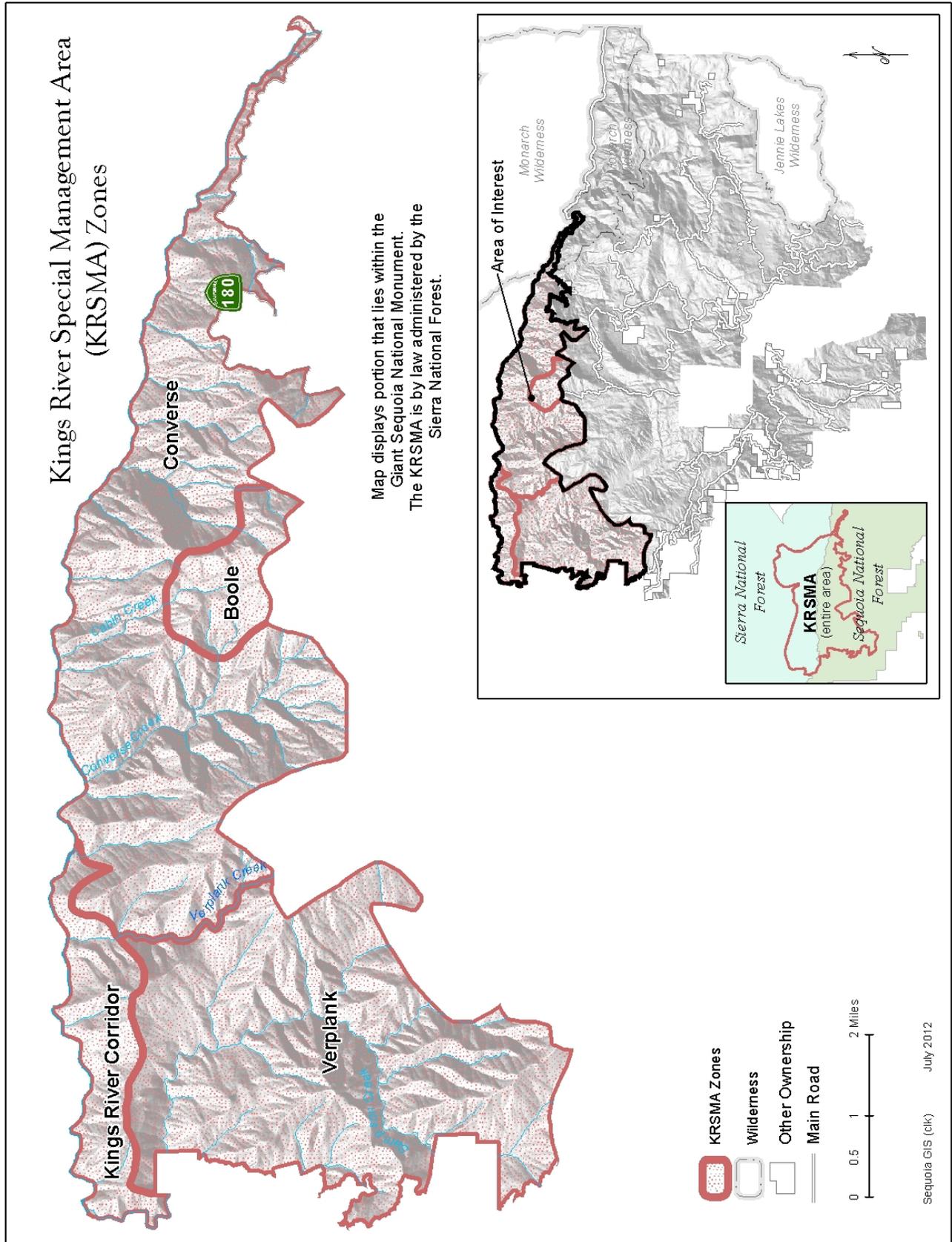


Appendix H—Special Area Maps

Map 8 Special Areas in the Monument



Map 9 Kings River Special Management Area

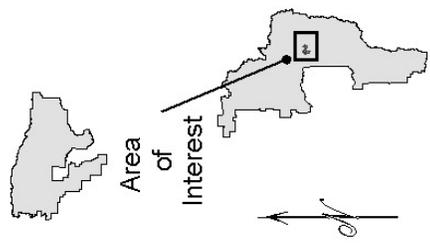


Map 11 Slate Mountain Botanical Area

Sequoia National Forest
Giant Sequoia National Monument

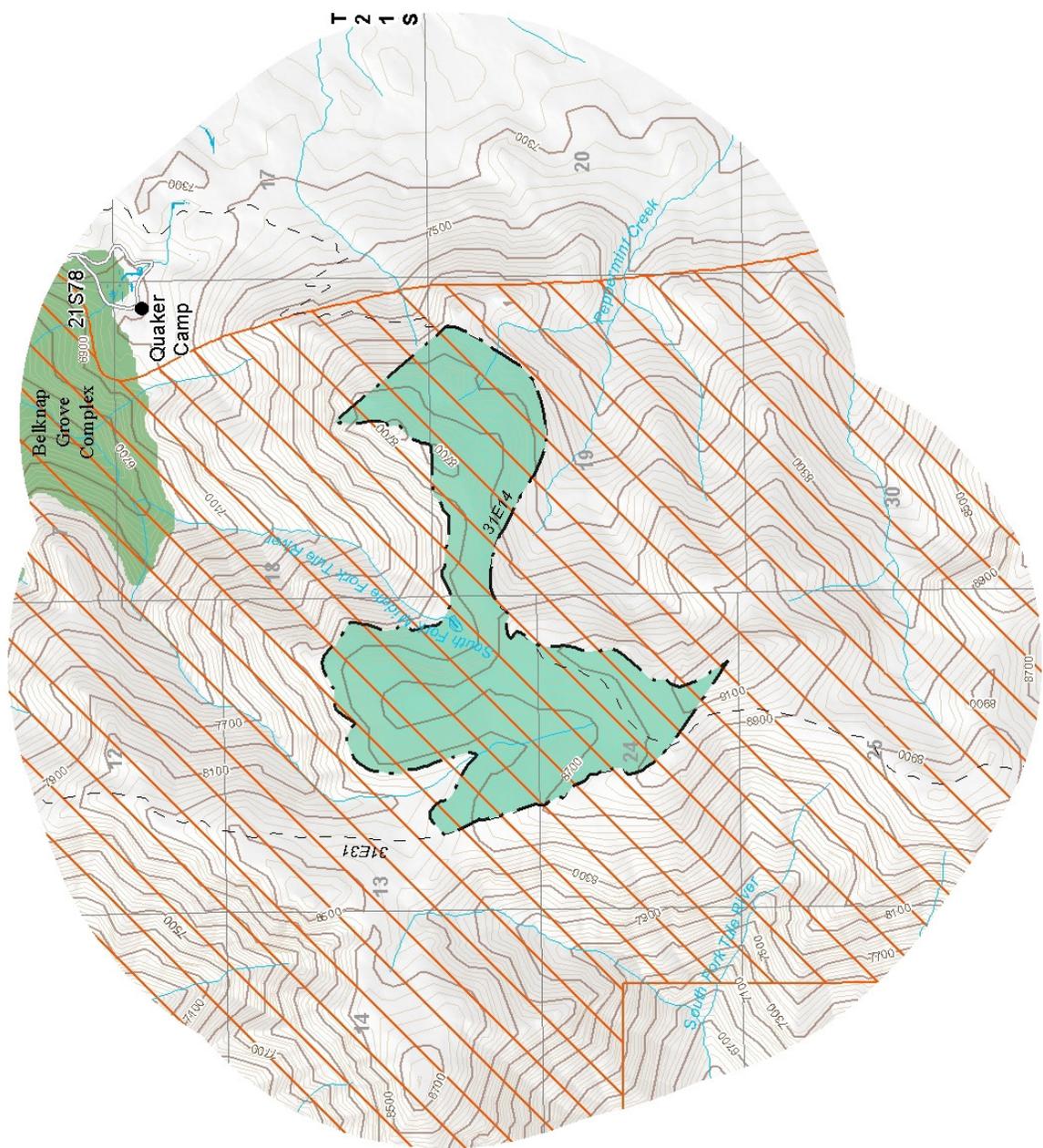
Slate Mountain Botanical Area

-  Botanical Area
-  Grove (Admin Boundary)
-  Slate Mtn. Roadless Area
-  21S78 Main Road
-  31E31 Trail

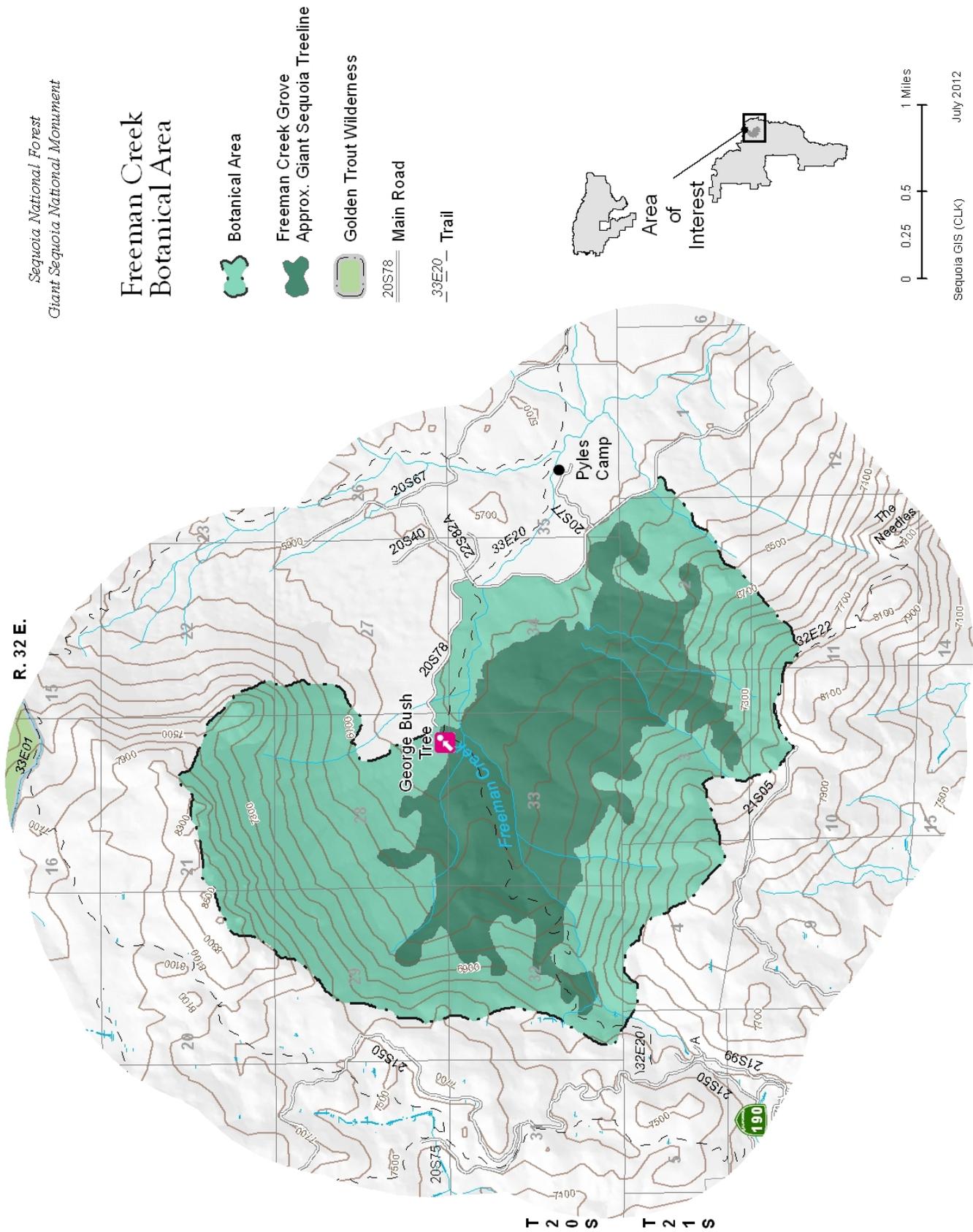


0 0.125 0.25 0.5 Miles
 Sequoia GIS (CLK) July 2012

R. 31 E. R. 32 E.



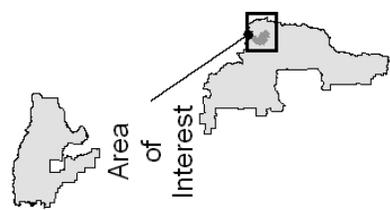
Map 12 Freeman Creek Botanical Area



Sequoia National Forest
Giant Sequoia National Monument

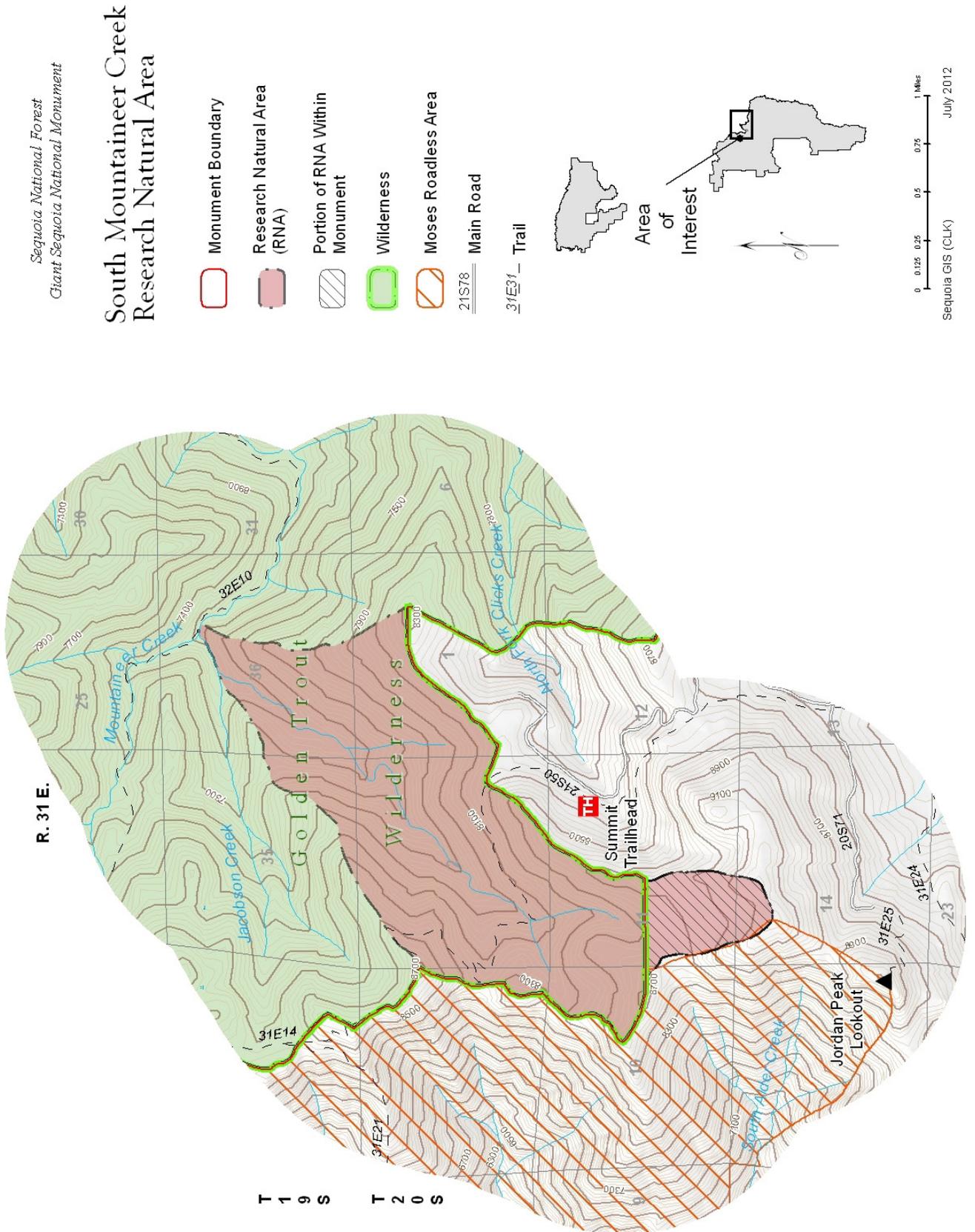
Freeman Creek Botanical Area

- Botanical Area
- Freeman Creek Grove
- Approx. Giant Sequoia Treeline
- Golden Trout Wilderness
- Main Road
- Trail

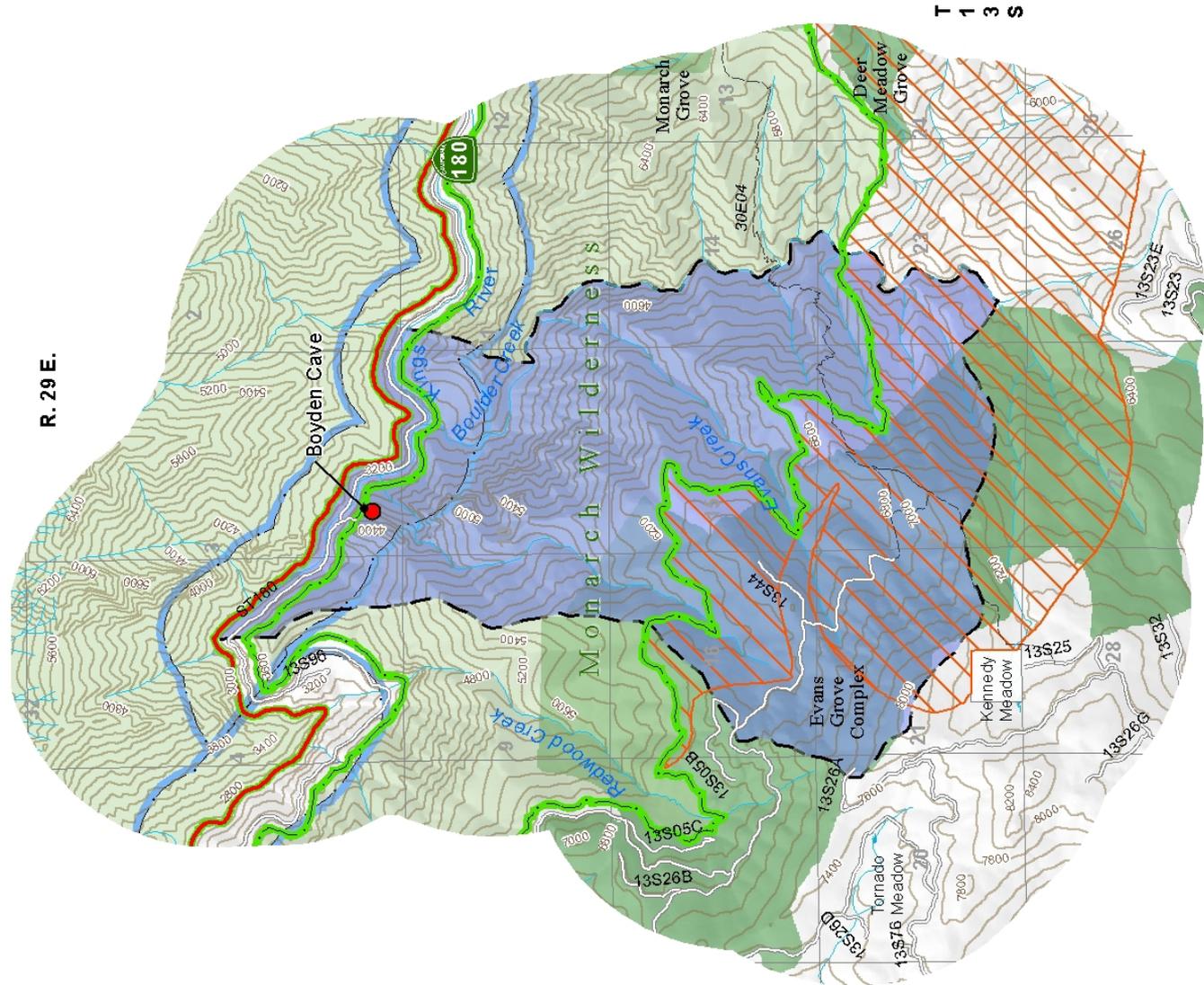


Sequoia GIS (CLK) July 2012

Map 13 South Mountaineer Creek Research Natural Area



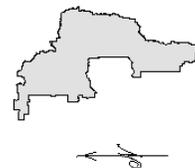
Map 14 Windy Gulch Geological Area



Sequoia National Forest
Giant Sequoia National Monument

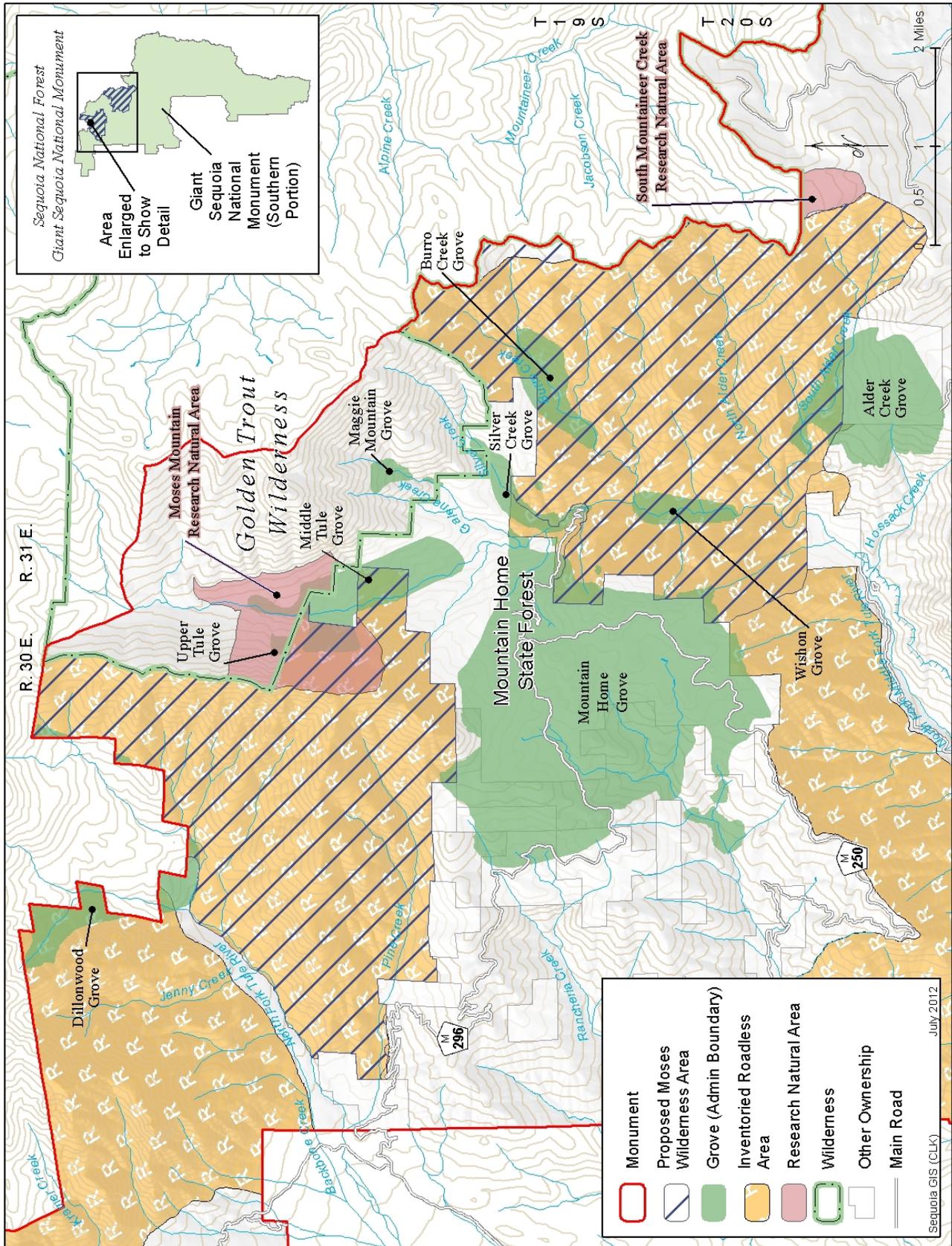
Windy Gulch Geological Area

-  Monument Boundary
-  Geological Area
-  Grove (Admin Boundary)
-  Wilderness
-  South Fork Kings Wild and Scenic River
-  Agnew Roadless Area
-  Other Ownership
-  Main Road
-  Trail



0 0.25 0.5 1 Miles
Sequoia GIS (CLK) July 2012

Map 15 Proposed Moses Wilderness



Appendix I—Clinton Proclamation

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Federal Register

Vol. 65, No. 80

Tuesday, April 25, 2000

Title 3—

The President

Proclamation 7295 of April 15, 2000

Establishment of the Giant Sequoia National Monument

By the President of the United
States of America

A Proclamation

The rich and varied landscape of the Giant Sequoia National Monument holds a diverse array of scientific and historic resources. Magnificent groves of towering giant sequoias, the world's largest trees, are interspersed within a great belt of coniferous forest, jeweled with mountain meadows. Bold granitic domes, spires, and plunging gorges texture the landscape. The area's elevation climbs from about 2,500 to 9,700 feet over a distance of only a few miles, capturing an extraordinary number of habitats within a relatively small area. This spectrum of ecosystems is home to a diverse array of plants and animals, many of which are rare or endemic to the southern Sierra Nevada. The monument embraces limestone caverns and holds unique paleontological resources documenting tens of thousands of years of ecosystem change. The monument also has many archaeological sites recording Native American occupation and adaptations to this complex landscape, and historic remnants of early Euroamerican settlement as well as the commercial exploitation of the giant sequoias. The monument provides exemplary opportunities for biologists, geologists, paleontologists, archaeologists, and historians to study these objects.

Ancestral forms of giant sequoia were a part of the western North American landscape for millions of years. Giant sequoias are the largest trees ever to have lived, and are among the world's longest-lived trees, reaching ages of more than 3,200 years or more. Because of this great longevity, giant sequoias hold within their tree rings multi-millennial records of past environmental changes such as climate, fire regimes, and consequent forest response. Only one other North American tree species, the high-elevation bristlecone pine of the desert mountain ranges east of the Sierra Nevada, holds such lengthy and detailed chronologies of past changes and events.

Sequoias and their surrounding ecosystems provide a context for understanding ongoing environmental changes. For example, a century of fire suppression has led to an unprecedented failure in sequoia reproduction in otherwise undisturbed groves. Climatic change also has influenced the sequoia groves; their present highly disjunct distribution is at least partly due to generally higher summertime temperatures and prolonged summer droughts in California from about 10,000 to 4,500 years ago. During that period, sequoias were rarer than today. Only following a slight cooling and shortening of summer droughts, about 4,500 years ago, has the sequoia been able to spread and create today's groves.

These giant sequoia groves and the surrounding forest provide an excellent opportunity to understand the consequences of different approaches to forest restoration. These forests need restoration to counteract the effects of a century of fire suppression and logging. Fire suppression has caused forests to become denser in many areas, with increased dominance of shade-tolerant species. Woody debris has accumulated, causing an unprecedented buildup of surface fuels. One of the most immediate consequences of these changes is an increased hazard of wildfires of a severity that was rarely encountered in pre-Euroamerican times. Outstanding opportunities exist for studying the

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consequences of different approaches to mitigating these conditions and restoring natural forest resilience.

The great elevational range of the monument embraces a number of climatic zones, providing habitats for an extraordinary diversity of plant species and communities. The monument is rich in rare plants and is home to more than 200 plant species endemic to the southern Sierra Nevada mountain range, arrayed in plant communities ranging from low-elevation oak woodlands and chaparral to high-elevation subalpine forest. Numerous meadows and streams provide an interconnected web of habitats for moisture-loving species.

This spectrum of interconnected vegetation types provides essential habitat for wildlife, ranging from large, charismatic animals to less visible and less familiar forms of life, such as fungi and insects. The mid-elevation forests are dominated by massive conifers arrayed in a complex landscape mosaic, providing one of the last refugia for the Pacific fisher in California. The fisher appears to have been extirpated from the northern Sierra Nevada mountain range. The forests of the monument are also home to great gray owl, American marten, northern goshawk, peregrine falcon, spotted owl, and a number of rare amphibians. The giant sequoias themselves are the only known trees large enough to provide nesting cavities for the California condor, which otherwise must nest on cliff faces. In fact, the last pair of condors breeding in the wild was discovered in a giant sequoia that is part of the new monument. The monument's giant sequoia ecosystem remains available for the return and study of condors.

The physiography and geology of the monument have been shaped by millions of years of intensive uplift, erosion, volcanism, and glaciation. The monument is dominated by granitic rocks, most noticeable as domes and spires in areas such as the Needles. The magnificent Kern Canyon forms the eastern boundary of the monument's southern unit. The canyon follows an ancient fault, forming the only major north-south river drainage in the Sierra Nevada. Remnants of volcanism are expressed as hot springs and soda springs in some drainages.

Particularly in the northern unit of the monument, limestone outcrops, remnants of an ancient seabed, are noted for their caves. Subfossil vegetation entombed within ancient woodrat middens in these caves has provided the only direct evidence of where giant sequoias grew during the Pleistocene Era, and

documents substantial vegetation changes over the last 50,000 or more years. Vertebrate fossils also have been found within the middens. Other paleontological resources are found in meadow sediments, which hold detailed records of the last 10 millennia of changing vegetation, fire regimes, and volcanism in the Sierra Nevada. The multi-millennial, annual and seasonal-resolution records of past fire regimes held in giant sequoia tree-rings are unique worldwide.

During the past 8,000 years, Native American peoples of the Sierra Nevada have lived by hunting and fishing, gathering, and trading with other people throughout the region. Archaeological sites such as lithic scatters, food-processing sites, rock shelters, village sites, petroglyphs, and pictographs are found in the monument. These sites have the potential to shed light on the roles of prehistoric peoples, including the role they played in shaping the ecosystems on which they depended.

One of the earliest recorded references to giant sequoias is found in the notes of the Walker Expedition of 1833, which described "trees of the redwood species, incredibly large . . ." The world became aware of giant sequoias when sections of the massive trees were transported east and displayed as curiosities for eastern audiences. Logging of giant sequoias throughout the Sierra Nevada mountain range began in 1856. Logging has continued intermittently to this day on nonfederal lands within the area of the monument. Early entrepreneurs, seeing profit in the gigantic trees, began acquiring lands within the present monument under the Timber and Stone Act in the 1880s. Today our understanding of the history of the Hume Lake and

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Converse Basin areas of the monument is supported by a treasure trove of historical photographs and other documentation. These records provide a unique and unusually clear picture of more than half a century of logging that resulted in the virtual removal of most forest in some areas of the monument. Outstanding opportunities exist for studying forest resilience to large-scale logging and the consequences of different approaches to forest restoration.

Section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431) authorizes the President, in his discretion,

to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases, shall be confined to the smallest area compatible with the proper care and management of the objects to be protected.

WHEREAS it appears that it would be in the public interest to reserve such lands as a national monument to be known as the Giant Sequoia National Monument:

NOW, THEREFORE, I, WILLIAM J. CLINTON, President of the United States of America, by the authority vested in me by section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431), do proclaim that there are hereby set apart and reserved as the Giant Sequoia National Monument, for the purpose of protecting the objects identified in the above preceding paragraphs, all lands and interests in lands owned or controlled by the United States within the boundaries of the area described on the map entitled "Proposed Giant Sequoia National Monument" attached to and forming a part of this proclamation. The Federal land and interests in land reserved consist of approximately 327,769 acres, which is the smallest area compatible with the proper care and management of the objects to be protected as identified in the above preceding paragraphs.

All Federal lands and interests in lands within the boundaries of this monument are hereby appropriated and withdrawn from entry, location, selection, sale, leasing, or other disposition under the public land laws including, but not limited to, withdrawal from locating, entry, and patent under the mining laws and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of the monument. Lands and interests in lands within the boundaries of the monument not owned by the United States shall be reserved as a part of the monument upon acquisition of title thereto by the United States.

The establishment of this monument is subject to valid existing rights.

Timber sales under contract as of the date of the proclamation and timber sales with a decision notice signed after January 1, 1999, but prior to December 31, 1999, may be completed consistent with the terms of the decision notice and contract. No portion of the monument shall be considered to be suited for timber production, and no part of the monument shall be used in a calculation or provision of a sustained yield of timber from the Sequoia National Forest. Removal of trees, except for personal use fuel wood, from within the monument area may take place only if clearly needed for ecological restoration and maintenance or public safety.

The Secretary of Agriculture shall manage the monument, along with the underlying Forest, through the Forest Service, pursuant to applicable legal authorities, to implement the purposes and provisions of this proclamation. The Secretary of Agriculture shall prepare, within 3 years of this date, a management plan for this monument, and shall promulgate such regulations for its management as deemed appropriate. The plan will provide for and encourage continued public and recreational access and use consistent with the purposes of the monument.

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Unique scientific and ecological issues are involved in management of giant sequoia groves, including groves located in nearby and adjacent lands managed by the Bureau of Land Management and the National Park Service. The Secretary, in consultation with the National Academy of Sciences, shall appoint a Scientific Advisory Board to provide scientific guidance during the development of the initial management plan. Board membership shall represent a range of scientific disciplines pertaining to the objects to be protected, including, but not necessarily limited to, the physical, biological, and social sciences.

The Secretary, through the Forest Service, shall, in developing any management plans and any management rules and regulations governing the monument, consult with the Secretary of the Interior, through the Bureau of Land Management and the National Park Service. The final decision to issue any management plans and any management rules and

regulations rests with the Secretary of Agriculture. Management plans or rules and regulations developed by the Secretary of the Interior governing uses within national parks or other national monuments administered by the Secretary of the Interior shall not apply within the Giant Sequoia National Monument.

The management plan shall contain a transportation plan for the monument that provides for visitor enjoyment and understanding about the scientific and historic objects in the monument, consistent with their protection. For the purposes of protecting the objects included in the monument, motorized vehicle use will be permitted only on designated roads, and non-motorized mechanized vehicle use will be permitted only on designated roads and trails, except for emergency or authorized administrative purposes or to provide access for persons with disabilities. No new roads or trails will be authorized within the monument except to further the purposes of the monument. Prior to the issuance of the management plan, existing roads and trails may be closed or altered to protect the objects of interest in the monument, and motorized vehicle use will be permitted on trails until but not after December 31, 2000.

Nothing in this proclamation shall be deemed to diminish or enlarge the jurisdiction of the State of California with respect to fish and wildlife management.

There is hereby reserved, as of the date of this proclamation and subject to valid existing rights, a quantity of water sufficient to fulfill the purposes for which this monument is established. Nothing in this reservation shall be construed as a relinquishment or reduction of any water use or rights reserved or appropriated by the United States on or before the date of this proclamation.

Laws, regulations, and policies pertaining to administration by the Department of Agriculture of grazing permits and timber sales under contract as of the date of this proclamation on National Forest System lands within the boundaries of the monument shall continue to apply to lands within the monument.

Nothing in this proclamation shall be deemed to affect existing special use authorizations; existing uses shall be governed by applicable laws, regulations, and management plans.

Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the national monument shall be the dominant reservation.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of this monument and not to locate or settle upon any of the lands thereof.

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IN WITNESS WHEREOF, I have hereunto set my hand this fifteenth day of April, in the year of our Lord two thousand, and of the Independence of the United States of America the two hundred and twenty fourth.





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