CHAPTER 1. PURPOSE OF AND NEED FOR ACTION

Document Structure

The Forest Service has prepared this Environmental Impact Statement (EIS) in compliance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations. This Environmental Impact Statement discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four chapters:

Chapter 1. Purpose and Need for Action: The chapter includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.

Chapter 2. Alternatives, including the Proposed Action: This chapter provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.

Chapter 3. Affected Environment and Environmental Consequences: This chapter describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource area.

Chapter 4. Consultation and Coordination: This chapter provides a list of preparers and agencies consulted during the development of the environmental impact statement.

Appendices: The appendices provide more detailed information to support the analyses presented in the environmental impact statement.

Index: The index provides page numbers by document topic.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the High Sierra Ranger District office in Prather, California.

Background

The Kings River Project (KRP) was developed from the consolidation of the Kings River Administrative Study (KRAS) and ongoing Pacific Southwest Research Station (PSW) studies. KRAS was established in 1994 by a Preliminary Study Plan and an Interdisciplinary Research and Management Project Proposal by PSW followed by a 1995 draft Landscape Analysis Plan. The KRP was established in 2002 with an inter-agency memorandum of understanding (MOU) signed by both the Station Director (PSW) and Regional Forester (Forest Service) in 2002.

Forests of the Sierra Nevada have been impacted and changed over the past 150 years. The first major pressure was sheep grazing. The change in fire patterns associated with

sheep grazing throughout the Sierras impacted regeneration of conifer forests and native plants. This disturbance probably amplified a structure already maintained by frequent fires; one of open stands dominated by large, old trees. It also resulted in excellent seed beds for tree regeneration by creating bare soil conditions (Verner and others 1992).

With removal of sheep and active suppression of natural fires at the beginning of the 20th century, forests experienced in-growth of conifers dominated by shade tolerant species such as white fir. Stands became dense, and a combination of logging and natural attrition of the old forest led to a decline in the number of large, old trees. Past logging activities that concentrated on removal of the large, valuable trees broke up the patchy mosaic of the natural forest, and this too encouraged development of dense regeneration patterns with very little horizontal heterogeneity. Large diameter trees were reduced in many areas to a small remnant population (Verner and others 1992).

All sources support the idea that selective logging and fire suppression have reduced the number of large trees, increased the density of smaller diameter classes and shifted composition toward shade tolerant fir and cedar (Appendix C). These changes have reduced the resiliency of the forest to damage from insects, fire and other disturbances and the sustainability of shade intolerant pines and black oak. Historically, conditions probably varied within stands by slope position and topography and at broader scales between drainages and geographic location. In general, different sources suggest the historical (pre-1850) forest was more open with widely spaced, large diameter trees (Sudworth 1900b, Stephens 2001, Stephens and Elliott-Fisk 1998, Stephenson and Calcarone 1999) (mostly pines) and there were fewer shade tolerant, fire sensitive species, such as white fir and incense cedar (Minnich and others 1995, Barbour and others 2002).

Late 19th century and early 20th century descriptions of the pre-settlement mixed conifer and pine stands in the Sierra Nevada indicate that forest structures were dominated by uneven-aged tree distribution (Dunning 1923, Show and Kotok 1924). Dunning (1933) concluded succinctly “The virgin stands are not even-aged”. He also states the nature of the mixed conifer forest type: “In relatively few sections of this large region are the stands uniform in age. All age classes are not present, as they would be in a true selection forest. Stands are usually made up of small even-aged groups, the ages of the groups differing by periods of 10 to 20 years”. In other words the historical forest was composed of many age classes often found in groups. This is similar to the desired condition as described in the proposed action.

Reconstructions of historical forests in the Sierra Nevada support that trees greater than 24 inches at breast height dominated Sierra Nevada forests (Taylor 2003). Reconstruction of ponderosa pine forests in the intermountain west (Arno and others 1995) confirms that large trees dominated forests. Recent reconstruction of forests in the Lake Tahoe Basin also support the conclusion that forests were dominated by large trees and less than 100 trees per acre smaller than 15 inches were present.

The Kings River Project was originally conceived as a management hypothesis: Will implementation of a landscape strategy such as the KRP uneven-aged silvicultural strategy combined with prescribed fire be able to restore forests to the historical pre-1850, fire resilient condition? This hypothesis is at the heart of the management experiment and drives all facets of the Project. Thus, the research that has been developed to support this management experiment is necessarily following the intended

management activities. All planned research has been conceived to examine the response of the ecological system to the set of management prescriptions meant to implement the overall vegetation management strategy. The design of project actions has been an iterative and collaborative process between management and research over several years. Research needs have driven some aspects while practical considerations and management needs have driven others. PSW intends to provide scientific feedback on the effects of the treatments, metered out over space and time, on particular features of interest (e.g. chemical/biological elements of watersheds, key sensitive species).

Within the KRP area the Sierra National Forest has treated four management units (5500 acres in Reese, 10S18, I-Rock, and South of Shaver) using a combination of uneven-aged silvicultural strategy and thinning from below. In addition, prescribed fire has been applied across approximately 17,300 acres (refer to Chapter 3). Approximately 5,000 of these acres have been treated twice using prescribed fire. Progress for the Kings River Project, including lessons learned and research projects published, is documented in the general technical report PSW-GTR-183 (Proceedings of a Symposium on the Kings River Sustainable Forest Ecosystems Project: Progress and Current Status, 1998).

The purpose of the Kings River Project is to restore historical pre-1850 forest conditions across a large landscape. There are several needs associated with this purpose and one is to increase the number of large trees across the landscape by retaining large trees and providing adequate growing space in each stand for all size classes of trees (seedlings, small, medium, and large).

The retention of large trees focuses on maintaining those age classes that are scarce in the landscape. Data from the Kings River Project area indicates that trees larger than 40" diameter breast height (dbh) occur at low frequencies.

Relevant Management Direction

As an administrative study, the Kings River Project is intended to create an experimental framework at the watershed scale to test various forest treatments necessary to provide wildlife habitat and improve forest health. The goals of the study are achieved by implementing a combination of project actions, research, and monitoring. Ground disturbing actions, such as vegetation management and prescribed burning, must be in compliance with management direction applicable to the Sierra National Forest at the time of the Record of Decision. Since inception of the project, management direction for the KRP study area has changed twice, leading to adjustments of proposed treatments. In addition, the Forest Service continues to adapt proposed treatments based on ongoing study and evaluation of past actions.

The Kings River project was originally designed and guided by the management direction in the Sierra National Forest Land and Resource Management Plan, which was approved in 1991. This plan was amended in 1993 by the standards and guidelines developed for the interim direction for California Spotted Owl conservation. This early direction was the basis for many of the treatments implemented in the late 1990's.

The 2001 Sierra Nevada Forest Plan Amendment (SNFPA) provided additional management direction for Old Forest Ecosystems and associated species. The 2001 decision recognized the ongoing Kings River Project, and allowed those projects that

were approved at the time of the decision to be implemented, and provided that variances from the standards and guides could be granted for administrative studies conducted in conjunction with the Pacific Southwest Research Station.

The 2004 Sierra Nevada Forest Plan Amendment provided the most recent direction applicable to the project when it replaced the 2001 decision. The 2004 decision recognized the ongoing nature of the Kings River Project, and allowed those projects that were approved at the time of the decision to be implemented.

Purpose and Need for Action

The underlying purpose of the proposed action is to restore historical pre-1850 forest conditions across a large landscape. The proposed action or alternatives considered will also meet the following needs:

GAIN KNOWLEDGE OF UNEVEN-AGED SILVICULTURAL STRATEGY AND PRESCRIBED FIRE

There is a need for knowledge about the response of forests to a management strategy consisting of a specific uneven-aged silvicultural strategy and prescribed fire program designed to restore forests to historical pre-1850 conditions across a large landscape. Forest managers, private companies and public interest groups have all expressed interest in whether uneven-aged forest management can maintain long-term viability of California spotted owl and other wildlife populations, improve forest health and develop a sustainable level of productivity. Substantial interest has always existed around reintroduction of fire into the Sierra Nevada ecosystem (Verner and others 1992, USDA 1996; USDA 2004a). The KRP area is representative of forest conditions found throughout the Sierra Nevada and is an adaptive management project, the only one, established in the south half of the Sierra Nevada to address questions about uneven-aged management and prescribed fire.

As part of the Forest Service adaptive management program for the Sierra Nevada (Blackwell 2004a, and b), there are research questions that could provide answers and improve the current state of knowledge regarding timber management and fuel treatment effects on wildlife habitat, wildfire behavior and watershed condition. Two research studies specific to gaining knowledge on watershed condition and wildlife habitat conditions are: the Kings River Experimental Watersheds (KREW) and the California Spotted Owl Study (CSOS). A monitoring study is being developed for the fisher and one is underway for air quality.

The historical pre-1850 forest condition is described in detail in a paper developed by district staff, and is included in Appendix A. It includes a description of the distribution of the number of trees by diameter class in the historical forest and the likelihood that it can be described by the inverse J-shaped curve.

The need to restore forests to this pre-1850 condition rather than some other one is based on several factors. Obviously, the pre-1850 forest was sustainable and resilient. This is demonstrated by its survival for thousands of years shaped by natural forces and management of certain plant communities by Native Americans for cultural purposes. All plant and animal species present today occurred in varying numbers during those years. Also, there does not appear to be a reasonable alternative after extensive

discussions between Sierra National Forest managers and PSW researchers. The present forest is not sustainable or resilient as described in the SNFPA 2004 Record of Decision (USDA 2004a, p.6) and Regional Forester extended "flexibility to manage tree density on individual sites and to improve the forest's resilience to drought, insect and disease conditions".

INCREASE THE NUMBER OF LARGE TREES

There is a need to increase the number of large trees (>35" dbh) across the landscape. As described in the background portion of this section, the Sierra Nevada and the KRP have experienced a decrease in the number of large old trees. As part of restoring the historical pre-1850 conditions there is a need to reverse this trend. In the final chapter of the CASPO report (Verner and others 1992) entitled "Projected Trends in Owl Habitat", a different paradigm is suggested where logging is designed to achieve or maintain ecological goals of a pattern of stand structures that mimic historical stand conditions. Without such a vision, forests of the Sierra Nevada will probably be split between areas of even-aged plantations and areas of dense and increasingly small diameter stands (Verner and others 1992).

Large trees are an especially important component of habitat for many wildlife species such as spotted owl and fisher (Verner and others 1992). Maintaining as many large trees in the landscape as possible is important for habitat suitability.

The number of large trees across the landscape can be increased by retaining the existing ones and providing adequate growing space in each stand. To distribute growing space several suggestions were considered: rotated sigmoid; a classic inverse J-shaped curve (Smith 1986); an inverse J-shaped curve with a variable diminution quotient developed by Richard Kunstman of the Yosemite Area Audubon; and leaf area index. The rotated sigmoid and leaf area index have operational limitations. The inverse J-shaped curve or similar (declining numbers with increased age/size) is used in the Sierra Nevada and worldwide (Lilieholm and others 1990). The inverse J-shaped curve distributes growing space among different age/size classes by BDQ (BDQ defines the essential parameters used in the uneven-aged silvicultural strategy where: B = residual basal area; D = maximum diameter; Q = the ratio between the largest diameter class and the next smaller diameter class and is also called the demunition quotient (Guilden 1991)). To decide how to accomplish this objective, the following different approaches were considered:

- Silviculturists define an uneven-aged stand as one with trees of three or more distinct age classes (Smith 1986). The largest trees are the ones in the oldest third of the age classes.
- Ecologists describe large trees as the large old ones whose retention is essential to maintaining ecosystem processes (Franklin, per. com. 2003).

The objective can be accomplished by retaining the trees that would potentially makeup the oldest third of the age classes in the stand (the large trees) and developing the historical uneven-aged structure and species composition, as much as possible, by working on the young and middle age classes. Similar approaches for retaining large trees have been used in the southwest (Covington and others 1997). Model results using uneven-aged treatments in the Sierra Nevada have demonstrated the feasibility of

maintaining the largest third of the diameter distribution to keep large trees in the landscape (Hollenstein and others 2001). Actual implementation on the Blodgett Forest, the Kings River Project, and Southern California Edison (SCE) forest land has shown the feasibility of maintaining large trees without resorting to arbitrary diameter limitations.

REDUCE TREE DENSITY

There is a need to increase resistance to insect attack, increase the proportion of shade intolerant pines and black oak, provide space for the growth of large trees and restore historical conditions. This condition is associated with the detriments of historical sheep grazing, wildfire suppression and subsequent increase in tree regeneration. The increase in tree density across the Sierra Nevada forests has been noted by several researchers (Vancat and Major 1978, Bouldin 1999, North and others 2004, Taylor 2004).

Work done on the Teakettle Experimental Forest adjacent to the Kings River Project by North and others (2006) has especially noted the encroachment of understory fir and incense cedar. High tree density leads to favorable conditions for the establishment and growth of shade tolerant species. This increase in density and encroachment of shade tolerant species has led to numerous ecological problems confronting management and policy makers in the Sierra Nevada including the Sierra National Forest, for which silviculture can offer some solutions. These problems include a poor resistance to insect attack, reduced tree vigor, the development of a higher proportion of shade intolerant species, increase in fuel ladders, higher potential for crown fires, and a shift from historical low tree density (Sierra Nevada Ecosystem Project, 1996). The SNFPA 2004 Record of Decision emphasizes that actions are needed in key areas to reduce the risk of future tragedies, like the 2003 fires and massive insect outbreaks of Southern California and elsewhere in the West.

PROTECT ADJACENT LANDOWNERS FROM WILDFIRE

During the last decade, there has been a growing concern about excessive accumulation of fuel in western national forests, including those in the Sierra Nevada. A 1990 Government Accounting Office (GAO) report stated, *"... The most extensive and serious problem related to the health of national forests in the interior west is the over-accumulation of vegetation."* There is also a growing urban intermix zone abutting against national forest boundaries. The population surrounding the Sierra Nevada mountain range has doubled between 1970 and 1990. The population is expected to triple by 2040.

There is a need for fuel reduction in the Wildland Urban Interface (WUI) within the KRP area and a need for Defensible Fuel Profile Zones (DFPZ). A large portion of the KRP area includes national forest lands adjacent to private property. A majority of these private lands have existing dwellings or plans for improvements. The Sierra National Forest is committed to reducing the fire risk to and from the WUI in and around the KRP. The local Highway 168 Fire Council has expressed a strong interest in protecting local communities from the effects of wildfire.

In 1995, a comprehensive federal fire policy for the Departments of Interior and Agriculture was drafted due to 34 fatalities and a growing recognition of fire problems

caused by fuel accumulation. The Federal Wildland Fire Management Policy and Review provided a broad philosophical and policy foundation for federal fire management programs and outlined a strategic direction for a broad range of fire management activities. It was founded on the principles that:

- firefighter and public safety is the 1st priority in every fire management activity;
- ecological processes and natural change agents would be incorporated into the planning process;
- fire management plans, programs, and activities will support land and resource management plans and their implementation; and
- fire management plans and activities will incorporate public health and environmental quality considerations.

Since 1995, in the aftermath of the Cerro Grande prescribed burn (May 2000), the Secretaries of the Interior and Agriculture requested a review of the Federal Fire Policy and its implementation. Among the conclusions were that the fire situation in the wildland urban interface is more complex and extensive than previously realized. Furthermore, because of fire exclusion, the conditions of fire-adapted ecosystems continue to deteriorate. The issues of ecosystem sustainability still need to be addressed and there is a lack of quality collaboration in interagency and interdisciplinary matters.

The Forest Service began to address the problems of fuel accumulations and the impacts of growth in the urban intermix with a cohesive strategy titled Protecting People and Sustaining Resources in Fire Adapted Ecosystems in 2000 (USDA 2000a). This report was a response to Congressional Direction for a 10-Year Comprehensive Strategy (Public Law 106-291) that a strategic plan be prepared for reducing wildland fire risk and restoring forest ecosystem health in the interior west. Recognizing the magnitude of the fire management problem from the conclusions of this report, the federal land management agencies drafted planning actions to mitigate the situation through the implementation of The National Fire Plan (USDA 2001c). The National Fire Plan focuses on operational and implementation activities and intends to:

- reduce the risk and consequence of stand replacing wildfire while insuring public and firefighter safety;
- improve the resilience and sustainability of forests and rangelands, and conserve and enhance species through the implementation of fire management activities;
- protect communities and restore fire-adapted ecosystems while protecting the hydrological and biological components associated with fire-adapted ecosystems;
- propose fuels management treatments (both through prescribed fire and mechanical treatments) of up to 3 million acres nationally each year.

REINTRODUCE FIRE

Frequent low-intensity fire which was a method to control surface fuels and small tree density has been replaced inadvertently by fire suppression. Today we understand the need to reintroduce fire as an ecosystem process. Fire is needed to control and maintain the landscape in fire regime condition class 1 (low risk from uncharacteristic wildfire effects), which will keep it within the historical range of variability for fire frequency and intensity.

CONTROL NOXIOUS AND NON- NATIVE WEEDS

There is an existing problem with control of identified noxious weed infestations. The KRP area includes populations of noxious weeds and non-native invasive plants (Clines 2005).

Noxious weeds and non-native invasive plants are increasing their range in the Sierra Nevada. In the KRP area most infestations are relatively small. Efforts to control these populations quickly will limit the cost of eradication greatly and prevent further environmental degradation. Invasive non-native plants tend to increase in response to disturbance (Keeley 2001) and along with competing vegetation; they also compete with seedlings, hampering reforestation goals. Forest Service goals for noxious weed management are to prevent the introduction of new invaders, conduct early treatment of new infestations, and contain and control established infestations (USDA 1995a).

CREATE REFORESTATION GROUPS AND CONTROL COMPETING VEGETATION

Understory trees within the Kings River Project are currently dominated by fir and incense cedar. These species are well adapted to establishment under tree shade in the absence of disturbance. This is a problem because it reduces the establishment and persistence of pine and oaks, and it creates denser stands dominated by species less resistant to fire.

There is a need to increase the proportion of shade intolerant pine and oaks. Pines are the most fire resistant trees in the mixed conifer forest. Creating conditions suitable for the establishment and growth of intolerant species requires canopy openings large enough to reduce the effect of trees along edges of openings and increase available growing space (York and others 2004). Openings create conditions suitable for the establishment of additional age classes that create uneven-aged stands. Uneven-aged stands are consistent with descriptions of the historical forest (Flintham 1904, Dunning and Reineke 1933, Bonickson and Stone 1982, North and others 2004). Reforestation groups provide the opportunity to alter species composition and increase the proportion of shade intolerant pine and oak.

There is a need to release tree seedlings in reforestation groups from competing vegetation. Controlling competing vegetation creates conditions suitable for the growth of conifers and oaks, creates uneven-aged stands, and replaces brush dominated openings with trees. Competing vegetation includes: bear clover (*Chamaebatia foliolosa*); white leaf manzanita (*Arctostaphylos viscida* spp.); green leaf manzanita (*Arctostaphylos patula)* deer brush (*Ceanothus integerrimus*), and grass. The brush species sprout and are very competitive with tree seedlings for soil moisture and nutrients because they have deep root systems and grow in dense stands, preventing tree seedlings from being established. Competing vegetation needs to be reduced to less than 20% crown closure around tree seedlings for a period of 2-5 years following planting (McDonald and Oliver 1984). Without vegetation control there is a high probability of reforestation failure.

IMPROVE WATERSHED CONDITION

There is a need for watershed restoration in sub-watersheds where cumulative watershed effects are a concern. The primary purpose for watershed restoration is to mitigate impacts from past activities and from foreseeable disturbances. The secondary purpose for watershed restoration is to improve watershed condition in sub-watersheds that do not meet desired conditions as described in the Draft Landscape Analysis Plan for the Kings River Project (USDA 1995b). Past disturbances have resulted in accelerated erosion in timber harvest areas and along roads. Some areas where past logging occurred has resulted in gully erosion and compacted soils. A number of roads on sensitive soils are insloped, unrocked and/or have relief culverts that are causing rill and gully erosion. A quantity of eroded soil is entering channels where the sediment is moving through the fluvial system. Some of these channels are currently out of equilibrium with sediment and this sediment is affecting beneficial uses including aquatic habitat. An interdisciplinary team identified sites in need of treatment to aid in watershed restoration within the Bear Meadow Creek, Providence Creek and Rush Creek sub-watersheds. These sites are identified in the Forest Watershed Improvement Needs (WIN) database and in the Bear Meadow Watershed Restoration Plan (Gallegos 1999), the Watershed Improvement Needs (WIN) Inventory for providen_1 and providen_4 Management Units, Kings River Project (Gallegos and Phillips 2004), and the Kings River Project: n_soapro_2 Management Unit #9 Watershed Improvement Needs (WIN) Sites (Morales 2004).

In meeting the above defined purpose, the proposed action and any action alternatives must also accomplish the following:

1. Design treatments to facilitate timely and scientifically valid studies.

Rationale: The Kings River Experimental Watersheds (KREW) study has specific requirements that may require variances from standards, guidelines and treatments that may differ from those generally considered for the uneve-aged silvicultural strategy. The stands within the KREW study area will receive different treatment combinations that are intended to address several questions posed in the SNFPA 2004 Record of Decision (Hunsaker 2004). Similarly, the California Spotted Owl Study (CSOS) is designed to treat some protected activity centers (PAC) in the KRP using the management direction for the defense zone of the WUI from the SNFPA Record of Decision of 2001.

2. Design treatments to protect and minimize impacts to Pacific fisher.

Rationale: One of the underlying purposes of the uneven-aged silvicultural strategy is to encourage the recruitment of large trees and enhance old forest characteristics over time. The proposed action should result in a reduction of fuels and a realignment of forest structure and composition with long term positive effects on existing late seral forest structure. The proposed action provides the best first step toward understanding whether fisher use of the forest changes as a result of treatments.

3. Design treatments in accordance with the Kings River Project uneven-aged silvicultural strategy (Appendix C).

Rationale: The KRP uneven-aged silvicultural strategy is defined by a tree removal regime that conforms to an inverse J-shaped curve with regeneration in groups. The inverse J-shaped curve is defined by a diminution quotient that defines 20% fewer trees in one diameter class then the next smaller class, a residual stand density that varies across the landscape, and the largest tree size grown in 200 years. Regeneration is achieved in groups that are less than three acres in size. This strategic approach and treatment method is designed to result in stands and landscapes that approach the historical condition, experience significantly less damage from fire, are more resilient, provide more growing space so encourage large tree growth, improve stand vigor and health, provide for the regeneration of intolerant species, and limit severity and scope of insect attack. In addition the KRP uneven-aged silvicultural strategy is compatible with other resource concerns and has proven successful in past applications in the KRP area (e.g. 10S18). The KRP uneven-aged silvicultural strategy allows a consistent approach that is easily replicated to help understand ecosystem response.

4. Design treatments to increase resistance to a crown fire and stand replacing fires.

Rationale: The effects of fire control and prevention, logging, and grazing have altered the forest tree species composition and structure from the condition that existed in the pre-1850 historical forest.

5. Design treatments to increase resistance to insect attack.

Rationale: Tree vigor has declined with in the initial eight management units due to increases in tree density. Low tree vigor reduces resistance to bark beetle attack. Bark beetle populations build up in weakened, drought stressed stands potentially becoming an epidemic insect outbreak. Once beetles find a suitable host tree, they release aggregating pheromones to attract other beetles enabling a “mass attack” that can overwhelm even a healthy tree’s defenses. Epidemic insect out breaks result in mortality, the loss of critical habitat and the accumulation of fuels. The Regional Forester in the Sierra Nevada Forest Plan Amendment Record of Decision (2004) has recognized that epidemic insect attack can have negative consequence for forests and neighboring communities. Epidemic insect attacks on the San Bernardino National Forest have resulted in increase fuel loads and the loss of habitat.

Natural controlling agents will not prevent an epidemic outbreak of bark beetles in susceptible forests. Carefully planned forest thinning, harvesting, and prescribed fire will yield long-term improvement of forest health. Vigorous stands across diverse forest landscapes are less susceptible to insect attack and destructive wildfire.

Proposed Action

The action proposed by the Forest Service is to implement uneven-aged management, small group selection, and prescribed fire upon eight management units totaling approximately 13,700 acres. Refer to the Proposed Action description in Chapter 2 and the maps in Appendix F for more details. Implementation of future treatments will depend on several factors, including resource conditions, management objectives, and agency budget, and all proposed actions will be subject to environmental review.

Decision Framework

Based on the purpose and need, the proposed action and alternatives, and the environmental effects analysis, the Responsible Official for this Project, Forest Supervisor Ed Cole, will decide whether or not to authorize treatments as described in the proposed action or Alternative 3. If an action alternative is selected, the Responsible Official will decide on the appropriate mitigation, monitoring and adaptive management actions to include in the project.

Public Involvement

A Notice of Intent (NOI) was published in the Federal Register on September 22, 2004. A revised NOI was published on December 20, 2004. The NOI asked for public comment on the proposal to be received by January 24, 2005. A Notice of Availability (NOA) was published in the Federal Register on January 27, 2006 announcing the availability of the Kings River Project Draft EIS.

In addition, as part of the public involvement process, the agency conducted a field trip to the KRP area on September 14, 2004. The agency began the field trip in the office providing maps, presenting written information, showing geographic information system (GIS) mapping, presenting research study information, and answering questions then continued into the field with stops at five locations.

Several other presentations or field trips were conducted for interested parties. A record of these presentations is filed at the High Sierra Ranger District Office.

Using the comments from the public, other agencies, and Native American groups, the interdisciplinary team developed a list of issues to address.

Issues

The Forest Service separated the issues into two groups: significant and non-significant issues. Significant issues were defined as points of disagreement with the proposed action based on anticipated adverse effects, those directly or indirectly caused by implementing the proposed action. Non-significant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations explain this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)…" A list of non-significant issues and reasons regarding their categorization as non-significant may be found at High Sierra Ranger District Office in the record.

The Forest Service (FS) identified three significant issues during scoping. The issues and factors used to measure their consequences between alternatives in Chapter 3 are:

Issue#1 – Large tree removal will have adverse effects to old forest dependant-wildlife species. FS Response: This issue will be tracked as an alternative considered in

Chapter 2 and addressed in Chapter 3 under environmental consequences to vegetation and wildlife.

- stem area of trees (basal area) greater than 35”
- number of trees removed
- potential wildfire and prescribed fire severity

Issue#2 - The use of herbicides/surfactant will create an adverse risk of harmful effects to people and wildlife. FS Response: This issue will be tracked as an alternative considered in Chapter 2 and addressed in Chapter 3 under environmental consequences to aquatic species, human health and safety and wildlife.

- Hazard to people and wildlife
- Comparison of past treatments on other projects

Issue#3 - The proposed action will threaten the viability and cause degradation of habitat of the spotted owl, marten, fisher, and goshawk and will lead to higher short-term risks on aquatic management. FS Response: This issue will be addressed in Chapter 3.

- Spotted owl = canopy cover, population viability, suitable habitat (i.e. California Wildlife Habitat Relationship (CWHR) classes by acres)
- Goshawk = canopy cover, population viability, suitable habitat (i.e. CWHR classes by acres)
- Fisher = canopy cover, population viability, and demographic study, suitable habitat (i.e. CWHR classes by acres)
- Marten = canopy cover, population viability, suitable habitat (i.e. CWHR classes by acres)
- Aquatic management = canopy cover, water temperature, large woody debris, population viability, and indicators of habitat quality (i.e. Sediment Index “V*”)

In addition to the above effort to identify the issues out of the comments received, the Sierra National Forest developed and considered alternatives to the proposed action based on comments received. Refer to the discussion in Chapter 2 under Alternatives Considered but Eliminated.

Comments on the Draft EIS

The Forest Service released the Draft EIS for public comment on January 27, 2006. The Forest Service received 17 comments in response to the release. In response to those comments, the Forest Service brought the “Reduction of Tree Harvest Size” alternative forward for detailed analysis. This alternative is fully described as Alternative 3. The Forest Service also improved and modified the analysis of effects in Chapter 3. The individual comments and responses are summarized in Appendix G.

Other Related Efforts

To attempt the large task of understanding the effects of managing a landscape on the scale of the Kings River Project, the Interdisciplinary (ID) Team developed a method of data collection and interpretation. Data collected over a period of approximately 8 years

was utilized to understand the current conditions of the stands in the project area. Data was collected in more than 1900 plots within the initial eight management units. The summarized geographic stand data is on file electronically at the High Sierra Ranger District Office in an Access database and in some brief reports with interpretation. The database and reports are incorporated in this EIS by reference. The information collected also gave the agency the ability to predict vegetation, fire, and wildlife response to the proposed action.

Forest Vegetation Simulator (FVS) modeling was utilized to simulate tree growth and mortality. Modeling was completed to predict wildfire effects using programs named: BehavePlus, FlamMap, and FVS Fire and Fuels Extension. See introduction to Chapter 3 for more information on modeling and data collection.

To help determine the effect of proposed project design measures on the purpose of this project (to restore historical pre-1850 forest conditions across a large landscape using the KRP uneven-aged silvicultural strategy with regeneration in groups and prescribed fire) and the opportunity to accomplish timely and scientifically valid studies, a GIS project was developed. It displayed initial design measures that limited activities in specific habitats or during a specific time period (limited operating periods). The GIS project for the EIS is on file electronically at the High Sierra Ranger District Office.