

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

RECORD OF DECISION

**FINAL YOSEMITE FIRE MANAGEMENT PLAN/
ENVIRONMENTAL IMPACT STATEMENT**

**Yosemite National Park
California**

The Department of Interior, National Park Service has prepared this Record of Decision on the *Final Yosemite Fire Management Plan/Environmental Impact Statement* for Yosemite National Park. This Record of Decision includes a description of the background for the project, a statement of the decision made, synopses of other alternatives considered, the basis for the decision, findings on impairment of park resources and values, a description of the environmentally preferable alternative, a listing of measures to minimize environmental harm, and an overview of public and agency involvement in the decision-making process.

BACKGROUND OF THE PROJECT

This revision of the Yosemite Fire Management Plan was initiated in 1999 because of changes to NPS and Federal fire management policy and to bring about needed refinements to the program, as indicated by research and monitoring that has been ongoing since the earliest days of fire program implementation.

Fire management planning and programs have been ongoing in Yosemite since 1970, when NPS fire management policy was changed to allow natural processes to occur when possible. The NPS went from suppressing all fires to letting some fires burn if they would contribute to accomplishing resource management objectives without threatening developed or populated areas or cultural sites. Refinements have been made to the Yosemite fire management program, and will continue to be made as knowledge of fire ecology and fire behavior increases. The previous revision to the FMP was completed in 1990.

Fire management is an integral part of the park's natural and cultural resources management program. The Yosemite Fire Management Plan will assist in achieving land management objectives that are defined in the 1980 General Management Plan, the 1993 Resources Management Plan, and the 1997 Vegetation Management Plan for Yosemite National Park. All major forest and chaparral communities in Yosemite evolved under

the influences of periodic fires, and many plants have developed adaptations to a regime of frequently occurring fires. Some plants are even dependent upon fire for successful reproduction. Unfortunately, decades of fire suppression have altered park vegetation. The effect of this has been to alter wildlife habitat as well. The restoration of fire to its natural role in park ecosystems is one of the highest natural resource management priorities for Yosemite.

The purpose of the *Final Fire Management Plan/Environmental Impact Statement* is to present and analyze alternatives for carrying out the fire management program in Yosemite. It also presents and analyzes effects that would occur as a result of implementing these alternatives in different areas of the park. The specific purposes of the Yosemite Fire Management Plan are to:

- ◆ Provide a plan that is consistent with National Park Service wildland fire management policy and adheres to guiding principles from the 2001 Federal Fire Policy.
- ◆ Identify and implement methods to restore and maintain park ecosystems and ecosystem processes that allow fire to play its natural role in the ecosystem, both as wildland fire and prescribed fire.
- ◆ Reduce the risk of fire to cultural resources (i.e. historic buildings, pictographs) through fuels reduction, prescribed burning, or fire suppression to prevent fires from damaging cultural resources. Fire will also be used as a tool to manage cultural landscapes.
- ◆ Reduce the risk of catastrophic fire, including near the wildland/urban interface (communities, government and commercial buildings, and other developed areas), while continuing to reverse the adverse effects from past fire suppression and prevention activities.
- ◆ Execute a fire management program that provides a safe environment for firefighters and the public, including safe operations and fire management related facilities (helibases, fire camps, fire stations).

Alternative A, the No Action Alternative, represents the status quo for Yosemite fire management. The three action alternatives presented in the *Final Yosemite Fire Management Plan/Environmental Impact Statement* are based on a thorough consideration of the best-available information on fire and its effects upon park resources, park visitors and other values at risk.

DECISION (SELECTED ACTION)

The selected action is unchanged from what is presented in the *Final Yosemite Fire Management Plan/Environmental Impact Statement*. Alternative D (Multiple Action Alternative) uses a combination of aggressive and passive fuel reduction techniques in order to quickly and effectively achieve protection, fuel reduction, and ecosystem restoration goals. Under the Multiple Action Alternative, aggressive and passive treatment strategies would be used in the inner wildland/urban interface (core community plus ¼ mile wide buffer) if needed, while prescribed fire fuel reduction techniques would

be used to achieve ecosystem restoration goals in other areas. The Multiple Action Alternative would decrease fuels in wildland/urban interface areas over a period of 6 to 8 years and restore fire to the ecosystem in 15 to 20 years. This alternative would reduce fuels on 1,095 acres per year in the inner wildland/urban interface (6,425 acres total) and would restore the natural fire regime by treating between 1,817 and 9,194 acres per year (31,503 to 160,894 acres within 20 years).

This alternative would require more time to accomplish wildland/urban interface protection and ecosystem restoration than under Alternative B, but less time than under Alternative C. Median and maximum fire return interval departure analyses were used to determine locations and set annual goals (range of acres) for treatments, using the various restoration, maintenance, and fuel reduction strategies (*Final Fire Management Plan/Environmental Impact Statement* maps 2-4 and 2-5 and table 2.5). Appendix 6 displays a multi-year burn schedule for accomplishing ecosystem restoration, maintenance burning, and fuel reduction in wildland/urban interface areas. Work would be accomplished with a combination of fire crews, the park forestry crews, and some contract labor.

This alternative divides the park into two fire management units: the Fire Use Unit which comprises 83% of the park and the Suppression Unit which comprises the other 17%.

Suppression Unit (17% of the park)

Wildland/Urban Interface Alternative D would combine aggressive and passive techniques to remove hazardous fuels and restore target forest conditions in the identified time frames, which are slower than Alternative B but faster than Alternative C. In areas close to developments in the six WUI communities (i.e., the inner WUI areas, defined as the core community plus a ¼ mile buffer around it) mechanical methods would be used to thin selected trees up to 20" dbh to reduce tree density.

In some areas, shrubs and ladder fuels would be removed to improve the defensibility of the communities. Passive methods would generally be used to thin vegetation up to 12" dbh to reduce hazardous fuels, while aggressive methods would generally be used to restore forest target conditions in the inner WUI by thinning trees up to 20" dbh. Aggressive methods could be used to concurrently reduce hazard fuels and restore target conditions in sensitive inner WUI sites to eliminate the need for more than one entry into the site with aggressive tools.

Thinned areas would generally be broadcast burned after an initial mechanical fuel reduction treatment. However, where safe and practical, prescribed fire would be used as the initial fuels treatment, in addition to be used perpetually for ecosystem maintenance. Woody material, such as logs generated during implementation of mechanical methods, would be used within the park to the fullest extent possible. Otherwise, logs would be removed following methods used by the Hazard Tree Program for many years, but only as

a last resort if material could not be burned, chipped, or used inside the park, and did not pose a fire hazard if left on site.

Media releases would generally be developed to inform the public and interested groups about treatment and disposal methods. Mechanical methods to restore target conditions in the inner WUI area are covered by this environmental compliance document. Mechanical methods to restore forest target conditions in the outer WUI area (from ¼ mile up to 1 ½ mile around the six WUI communities) would require environmental compliance documents subject to public review.

Passive reduction techniques would be used in highly sensitive locations of the WUI (i.e., cultural sites, important wildlife habitat, or areas with highly erosive soils). These areas would be identified during the preparation of the operational plan; the plan would be given interdisciplinary review by park archaeologists, biologists, and other specialists.

Alternative D would use different treatments depending on the level of risk, sensitivity of the area, and associated values to be protected.

Non-Wildland /Urban Interface, Non-Wilderness Beyond the 1½ mile radius around the six WUI areas, wildland fuel and vegetation would be treated with prescribed fire to achieve target restoration and maintenance conditions. Thinning of live and dead trees for fireline construction would be done to prepare these areas for prescribed burning. Passive or aggressive forest restoration methods would not be used. After initial fuel reduction work was accomplished, prescribed fire units would be set up for rotational burning to maintain an open forest structure. Thinning of small trees less than 20" dbh would occur within 200' of the centerline of roads and under utility lines where canopies are closely packed.

Wilderness Prescribed fire would be used generally to accomplish ecosystem restoration work in designated Wilderness areas of the Suppression Unit, such as near Wawona. Hand thinning and pile burning would be used where prescribed fire would not be safe. Fuel reduction techniques would be used in non-Wilderness within 200' of the centerline along road and utility corridors, generally on shrubs and trees less than 20" in diameter; all heavy mechanical equipment would remain outside the Wilderness boundary, and would not "reach over" from non-Wilderness to Wilderness areas. Equipment used in the Wilderness would need to meet the minimum tool requirements for Wilderness.

Fire Use Unit (83% of the park)

Non-Wildland/Urban Interface, Non-Wilderness: There is very little development in this unit, and there are no wildland/urban interface communities. These tracts are located mostly along road corridors and include Glacier Point, Tuolumne Meadows, White Wolf, and other areas where the Wilderness boundary is set back from existing human intrusions and development. Prescribed fire would be used to reduce wildland fuels near

developments; thinning of small trees generally less than 6" dbh would be done to protect these developments as a wildland fire approaches. Hand cutting and pile burning would be used typically to prepare a prescribed fire unit for burning. Trees, including dead trees, would be cut as needed to provide safe and secure firelines. These activities would be designed to reduce wildland fire intensity as fires approach non-Wilderness road and utility corridors. Managed wildland fire would be acceptable where it did not endanger buildings or sensitive sites (e.g., cultural resources).

Wilderness Managed wildland fire would be the primary fire management strategy used in Wilderness. Managed wildland fire would be permitted anywhere in the unit pending authorization of a Wildland Fire Implementation Plan. Use of equipment would meet minimum tool requirements for Wilderness. Hand cutting and pile burning would be used to prepare units for prescribed fire in Wilderness or to protect facilities from approaching wildland fire. Prescribed fire plans would be prepared for work in designated burn units.

TREATMENT METHODS

Table 1. displays the types of treatment methods used by each unit. The mechanical fuel treatment methods to be used most often along roadsides and in the inner WUI will include: aggressive yarding/grapplers; and passive hand cutting (using chainsaws)/piling, cutting/chipping, and low-impact skidding (using fetching arch). Disposal methods to be used most often will include: pile burning, lop and scatter, chip and broadcast, and chip and haul.

TABLE 1 FIRE AND MECHANICAL TREATMENTS USED IN ALTERNATIVE D BY UNIT (AN X INDICATES THE TREATMENT IS USED IN THE ALTERNATIVE AND A BOLD X INDICATES EXTENSIVE USE)

ALTERNATIVE D	Suppression Unit			Fire Use Unit		
	Wildland/ Urban Interface	Non-WUI/ Non-Wilderness Corridors	Wilderness	Wildland/ Urban Interface	Non-WUI/ Non-Wilderness Corridors	Wilderness
Aggressive Reduction	X					
Passive Reduction	X	X	X	X	X	X
Managed Wildland Fire					X	X
Prescribed Fire (in prescribed fire units)	X	X	X	X	X	X
WUI = wildland/urban interface						

Re-ignition of Wildland Fire, Use of Fire as a Tool on Special Resource Management Projects, and Helibase Upgrades will occur as described in the Final EIS. The actions common to all alternatives, including Alternative D, include activities related to: Public Safety; Public Information and Education; Utility Corridor Treatments; Mitigation

Measures (discussed in more detail below); protection of sensitive resources; non-native species management activities; air quality and smoke management; roads used for fire protection; monitoring; research; fire management organization and responsibilities; reporting; fire management budgeting.

The *Final Yosemite Fire Management Plan/Environmental Impact Statement* meets a minimum requirement for the administration of the Yosemite Wilderness as Wilderness. More specific analysis of fire management actions in Wilderness will be completed as part of the Fire Management Plan and on a case-by-case basis as needed for specific projects.

Refer to the *Final Yosemite Fire Management Plan/Environmental Impact Statement* for complete details on the selected action.

OTHER ALTERNATIVES CONSIDERED

Alternative A

Under the No Action Alternative (Alternative A), the existing direction and level of accomplishment in Yosemite's fire management program would continue. This alternative would use the strategies of the existing Fire Management Plan, written in 1990. These strategies include prescribed fire, management of natural ignitions (managed wildland fire), fire suppression, and hand cutting followed by pile burning and prescribed fire. This program has not been able to meet park needs because of the limited amount of annual accomplishment. The Fire Management Units for this alternative are the same as the "zones" used in the 1990 plan: Zone I – Prescribed Natural Fire Zone; Zone II – Conditional Fire Zone; and Zone III – Suppression Zone. Under this program the park has averaged 1,472 acres of prescribed burning and 2,567 acres of managed wildland fire each year. This does not approach the annual target of 16,000 acres that would need to burn annually to simulate natural conditions. While over the last decade the park has reduced hazardous levels of fuels near developed areas, the goal of providing an open defensible forest in and around every community may not ever be met at the current rate of work.

Alternative B

Under Alternative B, aggressive efforts would be taken to reduce fuels in and near developed areas (wildland/urban interface) within a period of five years and accomplish fire-related ecosystem restoration goals within 10-15 years. This alternative would reduce fuels on an average of 1,285 acres per year in the wildland/urban interface over five years (6,425 acres total) and restore the natural fire regime to between 2,520 and 12,872 acres per year, for a total of between 31,503 and 160,894 acres over the next 10-15 years. Prescribed burning would be increased dramatically over present levels and lightning fires would be managed where practicable. Work under this alternative would apply aggressive fuel reduction treatments to inner wildland/urban interface areas and accomplish park restoration goals in the least amount of time compared to the other

alternatives. Median and maximum fire return interval departure analyses were used to determine locations and set annual goals (range of acres) for treatments, using the various restoration, maintenance, and fuel reduction strategies.

Alternative C

Under Alternative C, the Passive Action Alternative, efforts would be taken to decrease fuels in wildland/urban interface areas within a period of 10 years, and accomplish ecosystem restoration goals in 25 years. Alternative C would reduce fuels in wildland/urban interface areas by an average of 766 acres per year (6,425 acres total over 10 years), and the fire regime would be restored in areas having missed three or more fire return intervals by treating between 1,260 and 6,436 acres per year (31,503 to 160,894 acres over 25 years). Prescribed burning would be increased over what the current program accomplished but not as much as under Alternative B and D. Fuel reduction work under this alternative would apply less aggressive treatments to inner wildland/urban interface areas. Under this alternative, it would take more time than under Alternative B and the proposed action, but less than would be needed under Alternative A to accomplish the park's minimum goals. By the time all areas were treated, however, many areas would have missed another fire return interval or two, thus, the risk of stand replacement fire would remain high throughout the restoration period. The basis for the difference in annual accomplishment, when comparing alternatives, is the time frame proposed for reaching the restoration targets and the type of treatments allowed. Because of this time frame, the number of acres to be treated each year would be the least among the action alternatives.

BASIS FOR DECISION

After careful consideration of the alternatives presented, their environmental impacts, planning goals, and public comments received throughout the planning process, including comments on the *Draft Yosemite Fire Management Plan/Environmental Impact Statement*, Alternative D has been selected for implementation. This alternative best accomplishes National Park Service and Federal fire management policy, the legislated purpose of Yosemite National Park, and the statutory mission of the National Park Service to provide long-term protection of Yosemite National Park's resources. The selected action also best accomplishes the stated purposes of the Yosemite Fire Management Plan (as described on page 1-2, in the Purpose and Need Chapter, of the *Final Yosemite Fire Management Plan/ Environmental Impact Statement*, and the criteria derived from these purposes. An analysis of the selected alternative's relationship to these goals is presented below.

Restore or maintain natural fire regimes.

As in Alternatives B and C, the fire management program under Alternative D would evolve toward greater activity to restore the natural fire regime in areas of the park where wildland or prescribed fire is an acceptable method of vegetation management. The 15 to 20 year timeframe for restoration would be longer than under Alternative B (10 to 15

years) but could likely occur without a significant difference in missing fire return intervals, compared to Alternatives C and A, under which such increases would continue to occur.

Actions under Alternative D are intended to restore and maintain the natural range of variability for plant community structure and fuel loads. This will restore and maintain natural fire regimes to the extent possible given other effects and constraints. It would reduce fuels on up to 1,095 acres annually in the inner wildland/urban interface (6,425 acres total) and would restore the natural fire regime by treating between 1,817 and 9,194 acres per year (31,503 to 160,894 acres total) over 20 years.

Focus on ecosystem processes.

Alternative D allows natural processes to prevail where they do not threaten structures or protected areas (such as in wildland/urban interface areas). Managed wildland fire will be used as the principal fire management tool in 83% of the park. In much of the remaining 17%, prescribed fire will be used to further ecosystem restoration so that, in the future, natural fire processes may be used in some areas to help sustain or maintain the park's ecosystems.

Protect and maintain cultural landscapes and historic and prehistoric resources.

The activities to protect wildland/urban interface in Alternative D will help maintain and protect cultural landscapes and landscape features; over 1000 acres of wildland/urban interface will be treated per year to reach goal conditions. Managed wildland fire and prescribed fire will be used to maintain light (within natural range of variability) surface fuels in the Suppression Unit; this will benefit archaeological sites and historic structures. Cultural resources will be protected, to the extent feasible, from the damaging effects of fire and fire management actions through a combination of prescribed fire and mitigation. Prescribed fire activities will be planned and implemented to help sustain traditional cultural resources (plants, occupation sites) where traditional activities such as plant gathering are important.

Manage consistently with other land use designations within Yosemite National Park.

Alternative D relies heavily on managed wildland fire and prescribed fire to restore natural fire regimes and ecosystem processes. These outcomes support Wilderness management by reconciling the natural and historic roles of fire in the Wilderness and providing prescriptions for response to natural and human-caused wildfires, as prescribed by NPS Wilderness policy.

Alternative D protects and enhances Outstandingly Remarkable Values (ORVs) within the boundaries of the Merced Wild and Scenic River, and protects ORVs outside the boundaries, by restoring and maintaining the natural range of variability of the ecosystem within the Merced River Watershed. In the case of the Tuolumne Wild and Scenic River, values for which the river was designated will not be degraded.

Establish and manage Special Management Areas to accomplish area specific goals.

The approach to prescribed fire and wildland/urban interface treatment in Alternative D protects and provides for the Special Management Area needs found in giant sequoia groves, wildland/urban interface areas, and boundary areas. Thinning activity will focus on reducing fuel accumulations in wildland/urban interface areas, but prescribed fire will be emphasized in areas outside the inner wildland/urban interface. These actions will reduce the risk of high-intensity wildland fire and help to restore natural and cultural resource conditions by restoring natural plant community structure and fuel loads in areas adjacent to Special Management Areas. Burning and thinning under Alternative D would be less aggressive than under Alternative B, which would produce more smoke than Alternative D. Alternative D is a balance between the rate of treatment and the impact on the public caused by smoke; smoke management is an important goal of the fire management program. Likewise, Alternative D would be more aggressive and have greater smoke and thinning impacts than under Alternative C, but also would reduce wildland fuels faster than Alternative C.

In summary, Alternative D contains the best balance of the rate of reduction of wildland fuels, especially around wildland/urban interface communities, and of the restoration and maintenance of more natural fire-dependent ecosystems. Alternative D is moderately aggressive in its timeline, and will achieve its objectives faster than Alternatives A and C but with less social effects than Alternative B, especially with regard to smoke and mechanical thinning impacts. Alternative D contains a variety of methods by which the risk of damage due to wildland fire will be mitigated, while providing a variety of mitigation measures which will ensure that treatment methods protect sensitive plant and animal species.

FINDINGS ON IMPAIRMENT OF PARK RESOURCES AND VALUES

The National Park Service has determined that implementation of Alternative D from the *Yosemite Fire Management Plan/Environmental Impact Statement* will not constitute an impairment to Yosemite National Park's resources and values. This conclusion is based on a thorough analysis of the environmental impacts described in the Final Yosemite Fire Management Plan/Environmental Impact Statement, the public comments received, relevant scientific studies, and the professional judgment of the decision-maker guided by the direction in Management Policy. While the plan has some negative impacts, in all cases these adverse impacts are the result of actions to preserve and restore park resources and values. Overall, the plan results in major benefits to park resources and values, and it does not result in their impairment.

In determining whether impairment may occur, park managers consider the duration, severity, and magnitude of the impact; the resources and values affected; and direct, indirect, and cumulative effects of the action. According to National Park Service Policy, "An impact would be more likely to constitute an impairment to the extent that it affects a

resource or value whose conservation is: Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park; Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or Identified as a goal in the park's general management plan or other relevant National Park Service planning documents." (NPS Management Policies, Part 1.4.5.) The impairment standard does not apply to land in El Portal because the Administrative Site is not managed under the Organic Act or the General Authorities Act (72 Stat. 1772)

The non-impairment policy does not prohibit impacts to park resources and values. The National Park Service has the discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, so long as the impacts do not constitute impairment. Moreover, an impact is less likely to constitute impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values.

The No Action Alternative has a greater potential for putting high value resources at risk, including groves of giant sequoia. The Mariposa Big Tree Grove of giant sequoias is specifically identified in the park's enabling legislation as an important resource that led to the park's designation. The other two groves are equally significant. Loss of any of the groves would be considered impairment. Plant communities in Yosemite have undergone considerable change due to past fire suppression activities. These changes are being locally reversed through fire management activities conducted under the previous version of the Yosemite Fire Management Plan; however, levels of accomplishment have been less than the approximately 16,000 acres per year, on average, estimated to have burned under natural conditions. Thus, departure from natural fire return intervals has continued. The No Action Alternative would perpetuate this cycle and the potential for impairment to park resources.

The actions comprising Alternative D will achieve the goals of the Yosemite Fire Management Plan (which include restoring and maintaining park ecosystems and ecosystem processes that allow fire to play its natural role in ecosystems, both as wildland fire and prescribed fire; reducing risk to cultural resources; and reducing the risk of catastrophic fire, including near wildland/urban interface, while continuing to reverse the adverse effects from past fire suppression and prevention activities) in a comprehensive, integrated manner that reduces fire-related risks while also allowing fire to assume its role in more of the park's ecosystems. Actions implemented under Alternative D that will cause overall negligible adverse impacts, minor and moderate adverse impacts, short term impacts and beneficial impacts to park resources and values, as described in the *Final Yosemite Fire Management Plan/Environmental Impact Statement*, will not constitute impairment. This is because these impacts have limited severity and/or duration and will not result in appreciable irreversible commitments of resources. Beneficial effects identified in the *Yosemite Fire Management Plan/Environmental Impact Statement* include effects related to restoring and protecting park resources and values.

This decision is made based on guidance contained in the NPS Management Policies (2001). The decision to implement Alternative D will result in a greater level of accomplishment of the goals of the fire management program, with the potential for reversing the departure from natural fire return intervals. If annual accomplishment rates and funding can be maintained, Alternative D would achieve ecosystem restoration and wildland/urban interface protection, and would do so with lesser on-site impacts than under Alternative B. The potential for high-intensity catastrophic fire that would put high-value resources—groves of giant sequoia, for example—at risk would be greatly reduced under the selected alternative.

The combination of the use of mechanical thinning techniques and prescribed fire in the inner wildland urban interface, and the use of prescribed fire in the outer wildland urban interface (up to 1 ½ miles around the core community) will provide a defense in depth against unwanted wildland fires. The restoration of wildland fire where this can be safely done will also reduce the extent of unnaturally dense accumulations of wildland fuels which pose a risk to natural and cultural resources, as well as to public safety and communities.

In conclusion, the National Park Service has determined that the implementation of Alternative D will not result in impairment of resources and values in Yosemite National Park.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

Environmentally preferable is defined as “the alternative that will promote the national environmental policy as expressed in the National Environmental Policy Act’s Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources” (Forty Most Asked Questions, Concerning Council of Environmental Quality’s National Environmental Policy Act Regulations, 1981).

The goals characterizing the environmentally preferable condition are described in Section 101 of the National Environmental Policy Act (NEPA). NEPA Section 101 states that “...it is the continuing responsibility of the Federal Government to... (1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations; (2) assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings; (3) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences; (4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice; (5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life’s amenities; and (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.” The environmentally preferable

alternative for the *Yosemite Fire Management Plan/Environmental Impact Statement* is based on these national environmental policy goals.

Alternative A

This alternative represents the current management direction with no dramatic or comprehensive changes taking place in the fire management program for Yosemite National Park. Consequences could include increasing the likelihood of more watershed-wide effects from intense, stand-replacement fire, thus a failure to achieve goals 1, 4, and 6. Wildland/Urban Interface work would be limited. Fuel loading and plant community structures would pose greater risk of fire loss in and among communities, historic structures, cultural landscapes and important natural elements of our national heritage, with only limited fulfillment of goals 2, 3 and 5.

Alternative B

This alternative would be the most aggressive in its timeline for restoration of ecosystems and protection of wildland/urban interface, and in its application of various tools for achieving that timeline. Mechanical thinning and utilization of various types of machinery would be applied the most liberally to achieve objectives. Although fuel loads and fire return intervals would be restored most quickly (among the action alternatives), it would be done with greater attendant on-site impacts, because of the greater use of mechanical equipment. These impacts would include greater ground compaction and soil damage. Thus, goals 1, 2, 3, 4, 5 and 6 would be attained, but at some cost, especially with regard to greater amounts of smoke due to a more aggressive schedule of prescribed fire acreage. The aggressive protection of Wildland/Urban Interface would fulfill elements of goal 2, 3, 4 and 5.

Alternative C

This alternative would be the least aggressive in its timeline and methodology for restoring ecosystems and protecting wildland/urban interface. It would be the least aggressive in its use of fuel reduction and restoration tools; use of aggressive mechanical equipment would be prohibited, thus ground compaction and soil damage would be least among action alternatives. But as a result, much of the park would remain untreated and the number of missed fire return intervals would continue to increase in some areas, particularly in lower and upper montane communities. Because of the increasing potential for high intensity catastrophic fire, which has occurred in Yosemite over the past decade and a half, goal 1 would not be fulfilled. As a result of Wildland/Urban Interface work, there would be limited fulfillment of goals 2, 3, 4, 5 and 6.

Alternative D

This alternative will realize each of the provisions of the national environmental policy goals stated in NEPA Section 101. Alternative D is moderately aggressive in its timeline for restoring ecosystems, but in a balanced manner. Various fire and vegetation management tools will be used in a manner that limits attendant impacts, such as ground compaction, soil damage and exotic species invasion. Like the other action alternatives, Alternative D increases the area where fire is allowed to resume its role in ecosystem maintenance. Risks in and near WUI communities (wildland/urban interface) are reduced,

and historic properties, cultural landscapes and natural aspects of our natural heritage are protected. Thus, it furthers goals 1, 2, 3, 4, 5 and 6.

Summary

The National Park Service has determined that the environmentally preferable alternative is Alternative D, Multiple Action. While some specific actions under other alternatives may achieve similar or in some cases greater levels of protection for certain natural resource values than under Alternative D, in aggregate, this alternative best achieves the six conditions prescribed under Section 101 of NEPA. While many of the actions in other alternatives may be similar to Alternative D in their effect and consequence, Alternative D achieves the greatest balance between the restoring wildland fire as a critically important ecosystem process, and protecting life, property, cultural resources, and natural aspects of our national heritage from unwanted wildland fire.

MEASURES TO MINIMIZE ENVIRONMENTAL HARM

The National Park Service has investigated all practical means to avoid or minimize environmental impacts that could result from implementation of the selected action. The measures have been incorporated into Alternative D, and are presented in detail in the *Final Yosemite Fire Management Plan/Environmental Impact Statement*.

A consistent set of mitigation measures would be applied to actions that result from this plan (see Appendix A). Fire monitoring by the Fire Management Staff and Resource Management programs will be implemented to detect deleterious results. These results from this program will guide and assure compliance monitoring; biological and cultural resource protection; noxious weed control; visitor safety and fire education; endangered, threatened and special status species protection; and other mitigation.

Mitigation measures will also be applied to future actions that are guided by this plan. In addition, the National Park Service will prepare appropriate compliance reviews (i.e., National Environmental Policy Act, National Historic Preservation Act [including the Yosemite Programmatic Agreement], and other relevant legislation) for future actions not covered under this Environmental Impact Statement, including projects in Wilderness involving mechanical treatments or prescribed fire.

PUBLIC AND INTERAGENCY INVOLVEMENT

Scoping

Public scoping was initiated in April 1999. A Notice of Intent was published in the *Federal Register* on March 22, 2001. Scoping comments were accepted until April 30, 2001. One planning meeting was held in Yosemite Valley. During this scoping period, the NPS held discussions and briefings with: local communities; local residents and home owners associations (Forest, Wawona, Yosemite West, and El Portal); local, regional and state fire organizations; air quality regulators; other agency representatives; park staff, elected officials; public service organizations; and other interested members of the public.

Nearly 100 letters concerning the *Draft Yosemite Fire Management Plan/Environmental Impact Statement* planning process were received. The major issues raised by the public included: restoration of ecosystem health; property risk reduction; emergency response; reduction of air quality effects; utilization of multiple techniques to reduce fuel accumulations; coordination with neighboring communities; coordination with fire management agencies; and others, all of which are summarized in *Chapter 1, Purpose of and Need for the Action*

Public Comment

The *Draft Yosemite Fire Management Plan/Environmental Impact Statement* was mailed to the public on May 10, 2002. The document was mailed to over 800 interested federal, state, local and Indian tribal agencies and members of the public, and to 24 public and university libraries (listed in *Chapter 6, Consultation and Coordination*). It was also posted on the park web-site.

The public comment period began June 18 (upon publication of the Notice of Availability in the Federal Register) and lasted through August 27, 2002. The park received 143 letters, faxes and emails. All comments were read and summarized into approximately 200 discreet concerns, which have been addressed by park staff and used to prepare the *Final Yosemite Fire Management Plan/Environmental Impact Statement*. All comments were duly considered, and preserved in the administrative record.

The issues that received the most attention during the public comment period included: the size of trees that could be removed in actions to achieve the restoration target; the extent of area where thinning activities could be used to achieve wildland/urban interface protection objectives; the rapid pace of restoration and wildland/urban interface protection in two of the alternatives; and, the number of areas that would be treated as wildland/urban interface. Comments received were largely from within the local/regional area; some organizations were represented by members from various parts of the nation.

Public Meetings and Outreach

To facilitate public review and comment on the draft DYFMP/EIS, public open houses were held on July 25, 29, 30 and 31, 2002, in Mammoth Lakes, Sonora, Oakhurst, and Mariposa, respectively, and on three occasions, June 29, July 24 and August 21, 2002, in Yosemite Valley. The combined attendance of the open houses (Yosemite Valley excluded) was less than 150 people. Written comments from the open houses were considered with the letters, faxes and emails received during the comment period.

On-site field trips to discuss the plan were also conducted during regularly scheduled Valley open houses. Discussions were not recorded for the public record.

Agency and American Indian Consultation and Coordination

Comment letters from federal and state agencies and American Indian Tribes are published in the *Final Yosemite Fire Management Plan/Environmental Impact Statement*, as is the history of the meetings between the National Park Service and these groups.

Advisory Council on Historic Preservation, California State Historic Preservation Officer and Indian Tribes – The National Park Service has developed a Programmatic Agreement in consultation with the California State Historic Preservation Officer, the Advisory Council on Historic Preservation, culturally associated American Indian tribes, and the public. The agreement stipulates a process for the treatment of historic properties, including identification, evaluation, and if necessary, mitigation of adverse effects. Standard mitigation measures may be used in situations where an undertaking would adversely affect a historic property. These include documentation, interpretation, materials salvage, and National Register re-evaluation. The National Park Service has satisfied its Section 106 responsibilities through execution and implementation of the Programmatic Agreement; a copy of the *Draft Yosemite Fire Management Plan/Environmental Impact Statement* and a request for review and comment was provided to the State of California Office of Historic Preservation on February 28, 2003; a copy was provided to the Advisory Council on Historic Preservation on March 13, 2004.

U.S. Fish and Wildlife Service – The Endangered Species Act of 1973, as amended (16 USC 1531 et seq.) requires all federal agencies to consult with the U.S. Fish and Wildlife Service to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or critical habitat. The National Park Service requested a list of federally listed endangered and threatened species that may be present or affected by actions proposed in the *Draft Yosemite Fire Management Plan/Environmental Impact Statement* on March 5, 2001. After initial consultation, the USFWS recommended that a Biological Assessment be prepared. A Biological Assessment on the *Draft Yosemite Fire Management Plan/Environmental Impact Statement* was submitted to the USFWS on September 20, 2001. The National Park Service requested that formal consultation be initiated.

The National Park Service and U.S. Fish and Wildlife Service met on July 25, 2002, during the public comment period for the *Draft Yosemite Fire Management Plan/Environmental Impact Statement*. On September 3, 2002, USFWS received additional information from the NPS; a follow-up meeting was held on November 19, 2002 to discuss specific issues. On December 17, 2002, USFWS received additional information from the NPS on elderberry plants in the El Portal Wildland Urban Interface. On April 1, 2003, USFWS received from the NPS, a monitoring plan for Elderberry plants in the El Portal Wildland Urban Interface (see Appendix B) and an El Portal Prescribed Burn Rotation Plan in Relation to Elderberry Plants (see Appendix C). On June 11, 2003, USFWS received from NPS a list of mitigation measures common to all Action Alternatives. On June 25, 2003, USFWS sent a draft Biological Opinion to Yosemite National Park. These were discussed by NPS and USFWS representatives on

July 28, 2003. In response, the *Final Endangered Species Consultation on the Yosemite Fire Management Plan* was provided to the NPS by letter from USFWS, dated July 29, 2003.

Comments Received Following Release of the Final EIS

The Notice of Availability for the Final EIS was published in the Federal Register on April 30, 2004; EPA's Notice of Filing was posted on May 14, 2004 (Volume 69, Number 94, Page 26818). During the No Action Period ending June 14, 2004, four individual letters of comment were received regarding the *Final Yosemite Fire Management Plan/Environmental Impact Statement*. These letters were received from representatives of four organizations, Environmental Protection Agency, Yosemite Area Audubon, the Sierra Club, and Friends of Yosemite Valley. The Sierra Club and Friends of Yosemite Valley requested that notification be made to media and interest groups of any commercial sale proposed to thin trees to reduce wildland fuels. The Audubon Society requested that language be included to state that "no trees or woody material would leave the park for production of commercial end-products." The park will generally notify the public through media releases and informational notices about treatments and disposal methods which will be utilized in its annual fuels program. It cannot guarantee that contractors removing woody material will not utilize the material. However, the amount of such material which can be utilized is expected to be small, since the bulk of the material will be chipped on site, or burned in piles, and is of relatively small diameter.

The Environmental Protection Agency suggested that it be mentioned that on April 15, 2004, Madera, Tuolumne, and Mariposa counties were identified as non-attainment areas for the new national eight-hour ozone standard, and that by June 15, 2005, projects in these counties will need to meet the conformity requirements of 40 CFR Part 93.150-160. The National Park Service is aware of Yosemite National Park's conformity requirements related to the new 8-hour ozone standard. For the National Park Service to determine if its fire management plans conform, a better understanding of ozone formation related to smoke emissions is needed. More research is needed to understand the contribution of smoke to the emissions of ozone precursor pollutants and their transformation into ozone. However, using Best Management Practices will reduce the amount of smoke emissions, and wildland fuels treatment projects will reduce the intensity and emissions from unwanted wildland fires.

CHANGES MADE FOR THE FINAL YOSEMITE FIRE MANAGEMENT PLAN/ENVIRONMENTAL IMPACT STATEMENT

A number of changes were made in the *Final Yosemite Fire Management Plan/Environmental Impact Statement*, based on public comment and other information.

- The number of Wildland/urban interface communities was reduced to six (Foresta, Hodgdon Meadow, Yosemite West, Yosemite Valley, El Portal, and

Wawona), removing from WUI classification numerous smaller development areas.

- The maximum diameter of trees removed mechanically to achieve forest restoration target conditions within the six WUI areas has been reduced from 31.5" to 20" dbh (diameter at breast height).
- WUI areas are broken into two components: the core community plus a ¼ mile-wide belt around it (inner WUI; 6,425 acres), and a belt extending from ¼ mile up to no more than 1½ miles from the community (outer WUI; 22,316 acres). Actual perimeters are affected by topography, and in several areas are less than 1½ miles.
- The reduction of wildland fuels and the restoration of forest target conditions within the six WUI areas would occur through four steps:
 - 1) Inner WUI - Mechanical thinning of trees less than 12" would be done initially, generally followed by pile burning, to reduce threats from wildland fire. Prescribed fire, rather than mechanical thinning, would be used initially in areas where it can be done safely and effectively. In parts of inner WUI that are Wilderness, only hand thinning would be allowed.
 - 2) Outer WUI - Prescribed burning would be used as the initial treatment for both wildland hazard fuel reduction and to achieve forest restoration targets. This may be done concurrently with the first step, providing greater protection for the communities.
 - 3) Inner WUI - Mechanical thinning of trees up to 20" to achieve forest restoration target conditions would be done following these initial two actions. Where prescribed fire in the first step did achieve target conditions, this third step would be omitted.
 - 4) Outer WUI - Mechanical thinning of trees up to 20" dbh would occur after the first three actions, but only if a prescribed fire has failed to achieve forest restoration target conditions. If subsequent mechanical thinning is needed following prescribed fire to achieve forest restoration target conditions in any part of the six outer WUI areas, a separate environmental compliance document for public review would be prepared for each forest restoration thinning project. In parts of outer WUI that are Wilderness, only hand thinning would be allowed.
- Mechanical forest restoration activities to achieve target conditions would occur only in the six WUI areas. The focus throughout the remainder of the park is to allow natural processes to prevail to the fullest practical extent, consistent with the protection of public safety and environmental regulations.

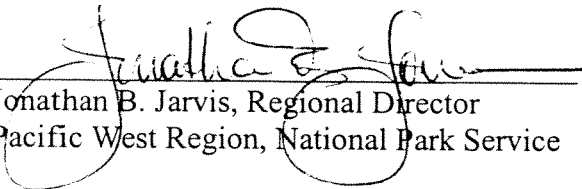
- Wildland fuel reduction in the inner WUI areas to reduce the risk of wildland fire would occur within six to eight years, and forest restoration in the six WUI areas would take up to 20 years under the Preferred Alternative (Alternative D). Removal of 12 – 20 inch dbh trees to accomplish this latter objective would be spread out over this time period. Commercial sale of timber would only be considered as a last resort if the woody material could not be burned, chipped, sold as firewood, or used for park administrative purposes, and if it poses a wildland fire risk if left on site. Implementation of all projects is subject to the availability of funds.
- Thinning for removal of hazardous wildland fuels along road corridors would be done to establish and maintain fuelbreaks and evacuation routes for wildland fire emergencies. Roadside thinning would be generally limited to trees and shrubs less than 12" dbh, and occasionally trees up to 20" dbh to break up continuous canopies along road margins. This thinning would occur no further than 200 feet from the road centerline, and would not occur in Wilderness.
- Road corridor thinning would occur along: 1) the portions of Wawona Road, Big Oak Flat Road, and El Portal Road (Highways 41, 120, and 140, respectively) that are within the Suppression Unit, 2) roads to Hetch Hetchy and Aspen Valley, 3) public roads within five WUI communities (Yosemite Valley is excluded), 4) the Mariposa Grove and Glacier Point roads, and 5) the fire motorway roads shown in red on Map 2-23.
- No new roads would be constructed, and no existing roads would be widened anywhere in the park to conduct hazard reduction or forest restoration thinning operations.
- Tracked or wheeled mechanical equipment would not be used anywhere in Wilderness to achieve forest restoration target conditions or to remove hazardous wildland fuels. Hand thinning of trees would be done for wildland fire or prescribed fire management in Wilderness areas.
- No trees or woody material would be sold to provide funding for either park operations or for the Yosemite fuels management program.
- For clarification, forest restoration targets are described as not based on any specific year in the park's history, but rather on a general range of conditions that existed prior to 90-130 years ago, when fires influenced ecosystems in a more natural manner, and before the onset of fire suppression. The result of fire's influence in Yosemite Valley, for example, is believed to have been a less dense conifer forest than exists today, with more oak habitat, larger meadows for wildlife, lower quantities of wildland fuels, and correspondingly lower intensities of wildland fires. Initial restoration of more natural conditions would be followed by the perpetual use of prescribed and wildland fire to maintain fire-dependent

ecosystems. Mechanical restoration work would be done where prescribed fire or wildland fire could not be safely used, either due to the risk of fire escape or to smoke issues.

CONCLUSION

Alternative D provides the most comprehensive and effective method among the alternatives considered for meeting the National Park Service's purposes, goals, and criteria for managing fire and fire risks in Yosemite National Park and for meeting national environmental and fire policy goals. The selection of Alternative D, as reflected by the *Yosemite Fire Management Plan/Environmental Impact Statement*, would not result in the impairment of park resources and would allow the National Park Service to conserve park resources and provide for their enjoyment by visitors.

Approved:


Jonathan B. Jarvis, Regional Director
Pacific West Region, National Park Service

8/1/2004
Date

APPENDIX A

Mitigation Measures for the Yosemite Fire Management Plan

To ensure that the action alternatives protect natural and cultural resources and the quality of the visitor experience, a consistent set of mitigation measures would be applied to actions of the Yosemite Fire Management Plan. The National Park Service will complete appropriate environmental review (i.e., as required by NEPA, the National Historic Preservation Act, the Endangered Species Act and other relevant legislation) for future actions not covered in the *Final Yosemite Fire Management Plan/EIS*. As part of the environmental review, the NPS would avoid, minimize, and mitigate adverse impacts to the greatest extent possible.

Natural Resources During the planning phase of any fire management activity, the presence or absence of special-status species in the area would be determined. Park subject matter experts would evaluate existing databases and maps, and, if necessary, request additional surveys or field verification. Site-specific mitigations would be developed and implemented consistent with the mitigation measures identified in Appendix C of the Biological Opinion (Appendix 9). If a project could cause an adverse impact on federally listed species, consultation with the U.S. Fish and Wildlife Service is required. Managed wildland fires would be constrained if they pose undesirable disturbance to important habitat for special-status wildlife or threaten populations of special-status plants.

During any fire management activity, impacts to soils would be minimized by using the best available technology, the minimum tool, avoidance of sensitive areas, and by rehabilitation of disturbed soil. Disturbed soils would be rehabilitated by restoring slope contour and using other best practices. Areas with a high probability of erosion would be stabilized using best available methods, as determined by the park's Resource Management Staff.

Fire management activities can create disturbance, and there is potential for fire projects to result in opportunities for non-native plant species to colonize or spread into disturbed areas. Sites would be surveyed before and after prescribed fire and mechanical fuel reduction to determine the presence or absence of non-native plant species. The Division of Resource Management would develop a list of high-priority target species, and surveys for such species would be conducted prior to fire management actions. If high priority target non-native plants were discovered on a project site, the Fire Ecologist and park Vegetation Management Specialist would develop appropriate mitigation measures.

Snags and Slash Generally, snags (dead trees) and other standing vegetation would not be cut during fire management activities unless they presented a threat to human life or safety, or presented a hazard to property or a valued resource. They may also be cut to control a wildland fire. If it was necessary to cut down a snag or live vegetation, the stump would be cut flush with the ground (as close to the ground as possible). Debris from cut vegetation would either be removed from the site, lopped and scattered to a depth of no more than 24 inches and burned during a subsequent prescribed fire,

piled and burned outside of fire season, or chipped on site. If chipped, the chips would be spread on site at a depth of no more than one inch, hauled for use elsewhere in the park, or transported to a commercial plant for processing. Disposal methods would depend on the amount of material to be disposed of, land use regulations, proximity to existing roads, and need for chipped wood outside or inside the park.

Air Quality All proposed prescribed burns would adhere to requirements of Title 17 California Code of Regulations regarding Agricultural Burning Guidelines, as well as regulations developed by Tuolumne County Air Management District, Mariposa County Air Management District, and/or San Joaquin Unified Air Management District, all of which have jurisdictional boundaries within Yosemite National Park. Additionally, park staff would monitor air quality adjacent to project areas and within developed areas of the park. Unhealthy or hazardous accumulations of smoke may trigger an aggressive management action that includes completely extinguishing the fire. When adjacent land management agencies are managing prescribed fires or wildland fires, cooperation and coordination would be initiated to minimize cumulative smoke impacts. The Smoke Communication Strategy would be employed if fire management activities could produce smoky conditions near populated areas (Appendix 4). This strategy outlines a series of steps that the agency would take to notify the public and other agencies of increasing degradation of the air.

Cultural Resources During planning for any fire management activity, cultural resource specialists would review available information to determine the presence, absence, or likelihood of occurrence of significant cultural resources. Consultation would be initiated with park-associated American Indian tribes if there is potential for occurrence of resources of traditional significance. If little or no data are available, and if there is potential for significant resources to occur within the fire management area, additional inventory for such resources would be conducted. Significant resources that could be affected by fire or fire management activities would be assessed for risk conditions and site-specific mitigation measures would be developed. Mitigations could include manually reducing fuel loads on or adjacent to resources, documenting flammable resources, identifying and avoiding archeological sites during ground-disturbing activities, and collecting at-risk artifacts or materials. For traditional resources, mitigation would include measures such as coordinating fire management activity to allow for traditional gathering prior to burning, developing burn prescriptions to foster desired plant characteristics, or protecting sensitive resources from fire. Managed wildland fires may be constrained if they have potential to significantly impact or destroy important cultural resources. Given the limited response time and potential for loss or damage to significant cultural resources in wildland fire situations, a proactive program of inventory, hazard assessment, and fuel reduction would be implemented. Cultural resource specialists would participate in fire management activities where necessary to reduce or avoid impacts to cultural resources, and where there is potential for resources to be discovered during activity. Post-burn assessments would be made to

document the changed condition of known resources. In some cases post-burn inventory would be conducted to document newly exposed resources.

Since data are limited on effects of fire on cultural resources, fire effects research and monitoring will be developed in conjunction with regional and National Park Service initiatives. Information resulting from cultural resource activities conducted in support of fire management would be incorporated into existing resource information systems. These activities would be reported as part of the annual program or as project-specific documentation.

Visual Impacts Aesthetic impacts would be judged on a case-by-case basis; any mitigation measures would be approved by the park Superintendent.

Safety and Human Impacts Impacts to visitors, employees, and park residents would be minimized by planning fire management activities during daylight hours and on workdays whenever possible. Before starting any project, the public and employees would be notified of proposed activities through road signs, trail signs, postings at visitor centers, entrance stations, post offices, or other areas of frequent use.

Communication/Coordination Communication, cooperation, and collaboration with neighboring agencies and communities, park partners, visitors, residents, and employees would be an essential component of all plans for fire management activities. Communication with adjacent agencies would be conducted when projects occur at or near their boundaries or when there is an identified impact that might or would affect park neighbors.

Protection of Sensitive Resources

Yosemite has a variety of special places and sensitive cultural and natural resources. If known sensitive cultural resource sites or habitats for a special-status species are within any proposed prescribed fire or managed wildland fire area, the area would be evaluated and suitable mitigation measures would be applied as needed.

Prescribed fire protocols require that resource specialists be involved in the project review process. On-the-ground inventories of prescribed fire units would take place as necessary. If inventories are required, burning would be delayed until the inventory and suitable mitigation was completed. If a prescribed fire unit has potential to provide habitat for special-status species, steps would be taken to work around nesting season and other sensitive periods of time for animals and plants. This would be done by altering the time of burning, providing direct protection of certain areas such as nesting trees, or simply not allowing fire into parts of the unit.

With wildland fires, which are unplanned events, resource advisors would be notified of the intent to manage a fire in a certain part of the park. The location of the ignition would

be reported and efforts would be made to get specialists into the area to perform basic inventory work as part of the cost of the incident.

If features are located that require mitigation, *action points* (geographic locations at which, if the fire reaches them, an action to mitigate is triggered) would be established and mitigation plans would be developed. Once the fire reached the action point the mitigation plan would be implemented. It could take several days to weeks before these actions were needed and the fire may not ever reach the identified resource at risk. The *maximum manageable area* (MMA) could also be set to exclude resources of concern.

Non-Native Species Management Activities

Non-Native Species Control Fire can be an effective tool in managing some non-native species. However, the *Yosemite Fire Management Plan* is not the primary planning instrument for control of non-native species. If the Resources Management Division prepares a non-native species control plan that recommends the use of fire, or requests specific burns be conducted to manage non-native plants, the fire management office would prepare a prescribed fire plan. This plan would include fire prescriptions, site preparation plans, and monitoring needed to help carry out the non-native species control plan.

Non-Native Species Invasion and Fire Management Activities There are occasions when fire management activities contribute to the invasion of non-native species. For example, in some areas, the timing of prescribed burns has contributed to the invasion of non-native thistle. As a result of knowledge gleaned through monitoring, prescribed burns in these areas are now scheduled for seasons when invasion is not enhanced by fire. Monitoring for non-native species would continue and, as the Resources Management Division identifies practices in the prescribed fire program that require modification, changes would be made.

Air Quality/Smoke Management

With all actions in Yosemite National Park or the El Portal Administrative Site involving prescribed or managed wildland fire, there would be strict adherence to state and federal regulations. This process mandates consultation with California Air Resources Board (CARB) and local (county) Air Pollution Control Officers (APCO), and other federal and state agencies that are involved with similar land treatments.

Ignition of prescribed fires would only be done on “burn days” or would be allowed by a variance from the county air pollution control officer. Visual aspects of the smoke column and/or particulates would be monitored for all prescribed fires. Air quality monitors would be placed at strategic locations and smoke sensitive areas when appropriate.

Monitoring data would be available to the county Air Pollution Control Officers upon request.

A Prescribed Fire Plan, including smoke management, would be provided to the Air Pollution Control Officers prior to a burn so that a burn permit can be issued.

Coordination with neighboring agencies would assure that the airshed is shared. This would normally mean that Yosemite would not be burning the same day as a neighboring agency, or that there would be adequate distance between the burn units for smoke dispersion.

Air Quality Watershed Strategy Smoke movement patterns have a direct relationship to watersheds, especially below 7,500 feet, since smoke tends to collect and flow downstream at night. Air quality watersheds of Yosemite are shown on Map 2-22. Smoke from lower elevation fires (below 7,500 feet) can be intense and tends to move downslope, settling and concentrating down valley from a fire. Fires above 7,500 feet rarely cause smoke problems because of different fuel types that tend to have a slow rate of fire spread.

The park would likely control new starts within an air quality watershed that already had a wildland fire being managed within it, if the new starts would result in a violation of PM-10 health standards. For example, if a large fire is burning in the Illilouette Creek drainage, it is possible that no other fire would be allowed to burn in that drainage or in the adjacent Merced River, Tenaya Creek, or Yosemite Creek drainages, which all flow into Yosemite Valley. Similar relationships exist for the Bridalveil Creek area, the area around Hetch Hetchy Reservoir, and the South Fork of the Merced River.

Coordination with neighboring agencies would be initiated if the agencies had wildland fires in the same drainage that have potential to cause significant smoke problems. A decision would be made to either control one or more of the fires or to mitigate the amount of emissions that would be produced. For example, holding actions applied to one or more flanks of a fire will herd it into higher elevations where fuels are sparser and fire activity, and thus smoke production, is not as intense.

Smoke Problems A smoke problem is considered to be any level of smoke that generates complaints. Mitigation of smoke problems will occur through scheduling, public notification of planned and ongoing projects, and subdivision of projects with handlines to facilitate control. "Burn day/no burn day" determinations are made by meteorologists at the California Air Resources Board and passed on to the county Air Pollution Control Officers and park fire personnel. However, it is not uncommon for a burn to be ignited during excellent conditions but persist so long that the atmosphere stabilizes and causes a smoke problem. In the event of heavy smoke accumulations, the public would be notified as per the Smoke Communication Strategy (Appendix 4).

Threatened, Endangered and Special Status Species and Communities

To ensure that implementation of the *Yosemite Fire Management Plan* protects sensitive plant and animal species, a consistent set of mitigation measures would be applied to actions that result from the Fire Management Plan. These mitigation measures would also be applied to future actions that are guided by this plan. The National Park Service would prepare appropriate environmental review for those actions not covered in the Environmental Impact Statement for the Fire Management Plan. As part of the environmental review, the National Park Service would avoid, minimize, and mitigate adverse impacts when possible.

Wetlands

Fire Management activities, including mechanical fuels removal, would comply with Executive Order 11990 (Protection of Wetlands), the Clean Water Act, and Director's Order 77-1 (Wetland Protection).

Increased caution would be used to protect these resources from damage such as erosion or siltation caused by mechanized equipment used to remove fuel and vegetation.

- Wetlands would be delineated by qualified National Park Service staff or certified wetland specialists, and prior to the use of mechanized equipment for fuel reduction activities.
- Prescribed fires would not be ignited in riparian areas.
- Wood removed mechanically as part of wildland fire risk reduction projects would not be piled in riparian areas.

Vegetation (including Special-Status Species)

Mitigation would occur prior to, during, and/or after fuel and fire management activities to mitigate immediate and long-term impacts to vegetation. These activities would vary by fuel reduction project or intensity of wildland, depending on the types of species and habitat affected.

Mitigation would include the following:

- Develop rehabilitation plans for areas affected by unwanted wildland fire. Such plans would provide for an assessment of damage caused by the fire, the implementation of methods to stabilize and rehabilitate damage caused by the wildland fire, and the collection of monitoring information to evaluate the relative success of the program in the achievement of rehabilitation objectives. Protection of the area from further ignition or disturbance by park visitors, stabilization of soil

through erosion control measures, or reseeded with native species are techniques that may be employed.

- Use native or seed-free mulch to minimize surface erosion and introduction of non-native plants.
- Locate firelines, helispots, fire camps, and other soil-disturbing fire management activities so that sensitive plant populations are avoided, and erosion is minimized.
- Provide for the inspection of vehicles arriving from outside the park to assist in fire suppression activities, to avoid importation of non-native plants and seeds. Vehicles will be cleaned before entering any sensitive sites which are identified by resource advisers.
- Utilize prescribed fire to eradicate non-native plants and create or maintain habitat for native plant species.
- Confine mechanical fuel treatments to specified work areas. Install temporary barriers, guides, fencing, and signs to protect sensitive and natural surroundings, including plants, trees, and roots from damage.
- Protect meadows and other sensitive resource areas, by defining and avoiding these areas, especially with tracked or wheeled vehicles.
- Implement a dust abatement program for mechanical clearing project activities. Standard dust abatement measures could include the following elements: water or otherwise stabilize soils, employ speed limits on unpaved roads, minimize vegetation clearing, and revegetate post logging.
- Projects that generate high levels of noise and other disturbance will be scheduled, to the extent practicable, during periods of the year and times of day when effects on species sensitive to such disturbance would be minimized.

Wildlife: Conservation measures for special status species

General measures

Prior to mechanical fuels treatment or prescribed fire project implementation, evaluate habitat for sensitive species likely to occur and take steps to minimize impacts on those species determined to be especially vulnerable. This evaluation will be conducted by a qualified biologist.

Provide education and training for wildland fuel reduction contractors and fire management personnel to limit activities destructive to sensitive wildlife species and their habitat. Schedule fuels and fire management activities to occur when disruptive effects on wildlife would be less, such as after nesting season of birds.

Preserve, where possible, natural features with obvious high value to wildlife, such as tree snags.

For mechanical fuel reduction activities, limit the chance of pollution spills, especially where activities are near aquatic or wetland habitats.

Allow natural processes where possible to maintain the presence of very large old trees and snags, large diameter logs, and decaying wood across the landscape through a mosaic of fire effects. Large prescribed fires will also be planned and ignited to achieve a mosaic of fire effects. Allow natural processes to maintain conditions and habitat features important to California spotted owls and their prey, including oak trees and oak snag trees with their cavities and large woody debris that supports fungal growth. Large prescribed fires will also be planned and ignited to achieve a mosaic of fire effects.

Specific Species Measures

Mountain yellow-legged frog

- Avoid filling aerial water buckets from lakes and ponds that contain mountain yellow-legged frogs (MYLF). Many of the remaining populations are composed of relatively small numbers of frogs. Removal of frogs and tadpoles through dipping could have an adverse effect on a remnant population. Chytrid fungus infection is causing further disappearance of MYLF populations. The dipping of a water bucket in an infected lake, and then in an uninfected lake could result in further extinctions of frog populations.
- Ensure that portable pumps used in lakes and ponds that contain MYLF have intake filters. Use of unfiltered pumps can cause mortality of tadpoles and frogs from being sucked up by pumps. Pumps can also cause a reduction of water in smaller ponds, and fuel and gas contamination of water.
- Avoid filling aerial water buckets from lakes and ponds that contain fish, or, if unavoidable, ensure that the helicopter avoids dropping any water from the bucket into any lakes or streams. Inadvertent introduction of fish into a lake or pond containing MYLF could result in the extinction of that MYLF population. Lakes and ponds that have reverted to a natural, fish-free state are possible locations for reintroduction of MYLF. Introduction of fish in such waters via aerial bucket drops would eliminate them as possible reintroduction sites. Maps will be used to denote bodies of water that should be avoided.
- Avoid retardant drops within 300 feet of water. Retardant could have an adverse effect on MYLF if it enters waters containing this species.

- Maps depicting known MYLF populations should be updated annually and provided to fire personnel. Fire crews should be briefed on the status of the MYLF, and the measures required to protect the MYLF and their habitat.
- Helispots, spike camps, and hand lines would be sited away from known MLYF habitat.

Yosemite toad

- Avoid filling aerial water buckets from lakes and ponds that contain Yosemite toads. Many of the remaining populations are composed of relatively small numbers of toads. Removal of toads and tadpoles through dipping could have an adverse effect on a remnant population. Chytrid fungus infection is causing further disappearance of Yosemite toad populations. The dipping of a water bucket in an infected lake, and then in an uninfected lake could result in further extinctions of populations.
- Avoid using portable pumps without intake filters in lakes and ponds that contain Yosemite toads. Such use can cause mortality of tadpoles and toads from being sucked up by pumps. The use of pumps can cause a reduction of water in smaller ponds, and fuel and gas contamination of water.
- Avoid filling aerial water buckets from lakes and ponds that contain fish, or, if unavoidable, ensure that the helicopter avoids dropping any water from the bucket into any lakes or streams. Inadvertent introduction of fish into a lake or pond containing Yosemite toads would result in the extinction of that Yosemite toad population. Lakes and ponds that have reverted to a natural, fish-free state are possible locations for reintroduction of Yosemite toads. Introduction of fish in such waters via aerial bucket drops would eliminate them as possible reintroduction sites. Maps will denote bodies of water to avoid.
- Avoid retardant drops within 300 feet of water and meadow. Retardant could have an adverse effect on Yosemite toads if it enters waters containing this species. Because most remaining populations of Yosemite toads are found in small, relatively shallow wetlands and ponds, these habitats may not be readily apparent from the air, so retardant drops in meadows should be avoided.
- Avoid cutting fire line, establishing spike camps and helispots, or altering water courses in meadows. Alteration of small streams and wetlands in meadows would have an adverse effect on Yosemite toads.
- Maps depicting known Yosemite toad populations should be updated
- Annually and provided to fire personnel. Fire crews should be briefed on the status of the Yosemite toad, and the measures required protecting the Yosemite toad and their habitat.
- Helispots, spike camps, and hand lines would be sited away from MLYF habitat.

California spotted owl

- From existing fuel loading, predict fire intensity in known spotted owl nesting and roost sites, and conduct preparatory burns or mechanical fuel reduction in these specific sites prior to ignition to control fire intensity to avoid reduction in canopy closure and consumption of nesting snags or trees, which would affect habitat quality.
- In spotted owl habitat, when possible, limit burn size, and/or ensure these area burns at a variety of intensities. If a burn reduces habitat quality for spotted owls in an area, adjacent areas should still provide suitable habitat. At lower elevations (<3,000 feet), wood rats are an important prey item, which are substantially reduced in fires.
- Avoid cutting fire line through known spotted owl nesting or roost sites, especially if trees and snags are to be felled. Disturbance and/or removal of canopy trees or nesting snags would affect current breeding efforts, and have an adverse effect on the long-term habitat quality of the site.
- Minimize the felling of snags in spotted owl habitat, and especially in known spotted owl nesting and roost sites. Hollows and cavities in snags and infirm trees (especially oaks) are the preferred nest sites of spotted owls in the central Sierra Nevada. Suitable nest sites are a limiting factor for spotted owls, with certain nest sites used for many years. Removal of these key features could have long-term effects on habitat quality.
- Minimize the consumption of coarse, down, woody debris. Such debris enables the growth of hypogeous fungi ("truffles"), which are an important food source for northern flying squirrels, an important prey item for spotted owls.
- Maps depicting known California spotted owl populations should be updated annually and provided to fire personnel. Fire crews should be briefed on the status of the California spotted owl, and the measures required to protect the California spotted owl and their habitat.
- Water and retardant drops would be avoided near known nest sites during the nesting season.
- Helispot and spike camps would be located away from known nest sites during the nesting season.

Pacific fisher

To minimize adverse impacts, the following measures should be incorporated into projects:

- All project related activities that may disturb fisher birthing and kit rearing should not occur within one-half mile of a known den site during the denning season

(March 1 to June 30), unless a qualified biologist determines that activities will not disturb fishers.

- Maps depicting known fisher den sites should be updated annually and provided to fire personnel. Fire crews should be briefed on the status of the fisher, and the measures required to protect den sites.
- If a fire occurs near a known fisher den site, Yosemite National Park wildlife biologists should assess the effects of the fire on the fisher habitat, and the den site if affected.
- Minimize the loss of large trees and snags with cavities, especially black oaks. Large trees with cavities are the most important sites for dens, and the availability of such trees appears to be a limiting factor to fishers.
- Maintain canopy closure greater than 60% over trees and snags that provide potential den sites. Fishers avoid forest openings, and select habitat with a high degree of canopy closure. A potential den site tree or snag could be preserved, but if canopy closure over the site were reduce to below 60%, it would be unlikely that it would be used by a fisher.
- Minimize the consumption of coarse, woody debris, or ensure variable burn intensity over the area. Habitat complexity in the form of down trees of various sizes and understory vegetation are important fisher habitat features, providing cover, den sites, and subnivian (under snow) spaces hunting and cover in winter.
- In fisher habitat, when possible, limit burn intensity or size, and/or ensure the area burns at a variety of intensities. If a burn reduces habitat quality for fishers in an area through consumption of coarse woody debris, reduction in canopy closure, and reduction in understory complexity and potential den sites, adjacent areas should still provide suitable habitat.
- For known den sites, manage fuels around the site to avoid their loss, and minimize human activity around the site. Given the extremely low density of fishers in Yosemite, every den site is important (note: no fisher den sites have been found in Yosemite for decades, although their presence is suspected).

Terms and Conditions for listed species

Valley Elderberry Longhorn Beetle

All National Park Service personnel working in the areas in which the insect is found will be briefed on the status of the beetle, the need to protect to protects the host elderberry plants, requirements to avoid damaging elderberry bushes, and possible penalties for noncompliance with identified avoidance and mitigation measures.

Contractors and all contractor on-site personnel should be briefed on the location of elderberry shrubs, avoidance requirements, and penalties for noncompliance.

Before clearing or burning takes place in the El Portal WUI zone, a qualified NPS employee will flag all elderberry bushes in the project area. No mechanical clearing of elderberry bushes would occur within the VELB burn units.

Elderberry plants in El Portal burn units will be burned on a cycle of no less than five years, and monitored to ensure burn objectives are met.

California red-legged frog

California red-legged frogs have disappeared from Yosemite, but the park does have potential habitat. Retardant drops within 300 feet of surface water will be avoided unless there is a threat to human life. Dipping with helicopters from waters known to contain bullfrogs will not occur unless there is a threat to human life. Maps of bullfrog infested areas and potential red legged frog habitat will be used to avoid transportation of bullfrogs into red-legged frog habitat.

Bald eagles

There are no known nesting bald eagles in Yosemite National Park. Bald eagles forage inside the Park at Lake Eleanor, and nest outside the Park at Cherry Lake. Smoke from burns could disturb foraging bald eagles. No burning during the nesting season (from February 15 to August 15) near known nesting sites unless a qualified biologist determines that activities will not adversely affect the bald eagle.

APPENDIX B

Monitoring Plan: Elderberry Plants within the El Portal Wildland-Urban Interface

Background

Prescribed burn treatments are a management element of the El Portal Administrative Site. Prescribed burns are conducted for hazard fuel reduction and restoration and maintenance of viable native plant populations including three plant species listed as Rare through the California Endangered Species Act, through the elimination of non-native plant species and reintroduction of fire as a natural ecosystem process. Some prescribed burn units contain elderberry plants, the sole host for the Valley Longhorn Elderberry Beetle (VELB).

Purpose

To monitor the condition of elderberry plants within burn units, and their potential to serve as habitat for VELB. Three key objectives are addressed in this monitoring plan:

1. Maintenance/establishment of shrub structure on individual plants that will support VELB, specifically critical stem size.
2. Natural regeneration and replacement of shrubs that may be consumed during prescribed burn operations - in numbers and densities sufficient to promote a sustainable population of VELB.
3. Phasing and rotation of burns to allow for retention of enough shrubs to support the existing VELB population level.

Monitoring Objectives, Techniques, and Timing

1. Maintenance/establishment of shrub structure on individual plants that will support VELB.

Barr (1991) studied the distribution and status of the VELB in California, and found that evidence of VELB activity was generally located in branches that were greater than one inch in diameter, though activity was infrequently found in stems as small as 0.5 inches in diameter. In El Portal, VELB exit holes have not been found in branches smaller than one inch in diameter, corresponding with earlier studies. Of the 134 plants found within the El Portal burn units that would receive burn treatments, there were 527 stems greater than 1" in diameter. Of those, only 14 had exit holes indicating active or past habitation by VELB.

In order to insure maintenance of habitat appropriate for VELB within these units, each plant has been mapped (GPS downloaded into GIS) and has been given a reference number.

Phases

Baseline – A baseline will be established immediately upon approval of the Yosemite Fire Management Plan to document the current structure of each individual shrub. Data collection will include the following:

- Plant Reference Number
- Total number of live stems
- Number of stems in three diameter size classes (as measured with calipers or a “Go-No- Go tool): ½” to 1 inch; 1 inch, greater than 1 inch

Preburn – As specific burn units are treated, the plants within that unit will be monitored for these characteristics immediately prior to the treatment.

Postburn - Follow-up monitoring will occur

- **One week postburn;**
- **Three months postburn** (to determine survival of the individual);
- **One year postburn** (to detect new stem sprouting); and
- **Three years postburn** (to get estimates of how fast new stems move into the critical size category).

Each unit is scheduled for burning every five years, and this schedule will allow for adjustments to burn intensity and shrub pre-treatment changes, if necessary, prior to the second and subsequent burns.

2. Natural regeneration and replacement of shrubs - that may be consumed during prescribed burn operations - in numbers and densities sufficient to promote a sustainable population of VELB.

This objective will be tracked using the information from the monitoring described under objective 1, in conjunction with USF&W VELB experts.

3. Phasing and rotation of burns to allow for retention of enough shrubs to support the existing VELB population level.

The current burn schedule insures that at least 5 years will pass between prescribed fire events for any unit. Using data collected in Objectives 1 & 2 above, adaptive management can move burning back (delayed), if there has been insufficient regeneration of critical stems. Treatment of burn units will be done to retain unburned units adjacent to burned units to allow for elderberry plants to serve as potential refugia for VELB that will lose available habitat over the short term. All plants with exit holes will be protected from fire.

All other plants will be burned to promote natural regeneration. See separate burn schedule description for the 5-year plan for burns.

References

Barr, Cheryl B. 1991 "The distribution, habitat, and status of the valley elderberry longhorn beetle *Desmocerus californicus dimorphus*." U.S. Fish and Wildlife Service Sacramento, CA