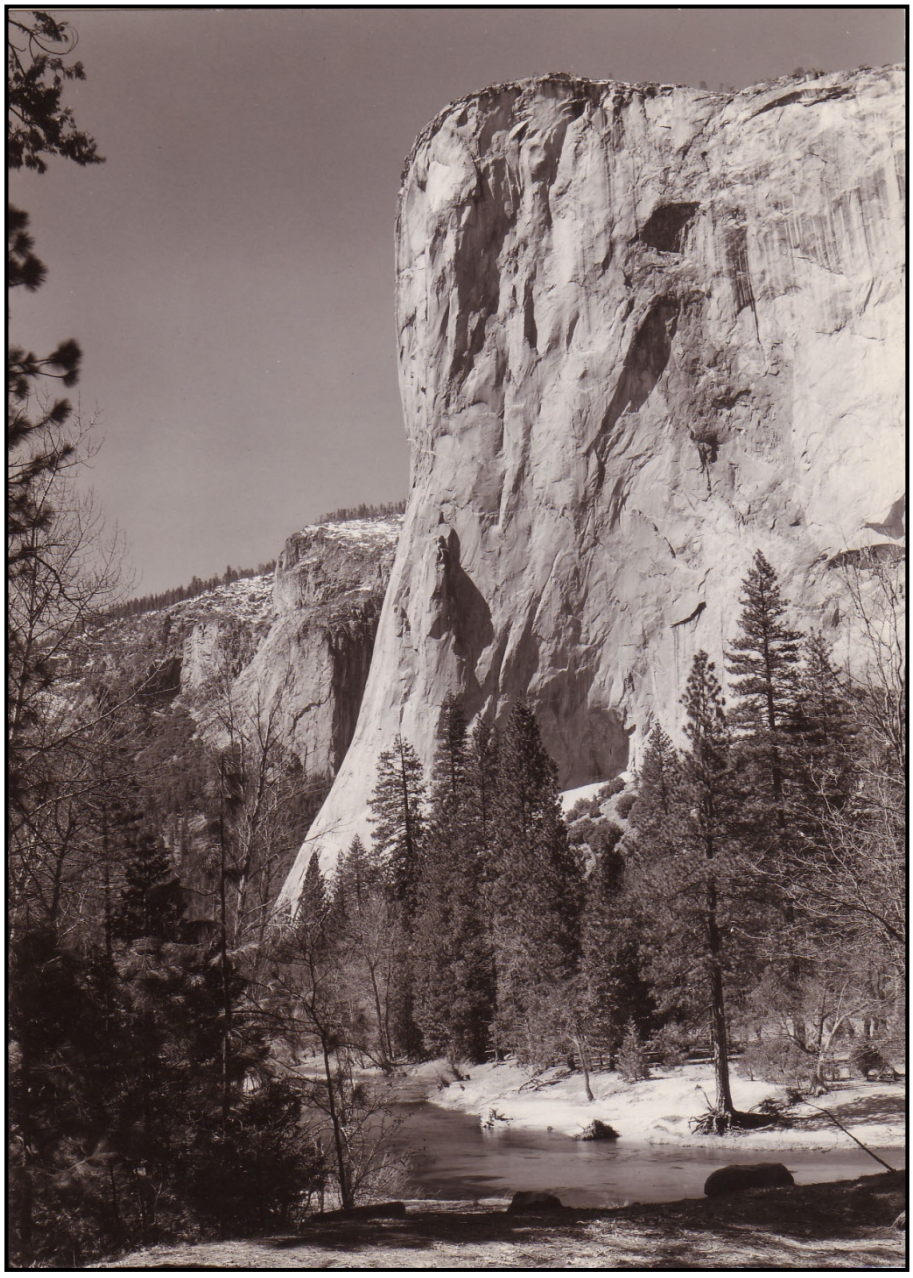
Yosemite National Park

National Park Service
U.S. Department of the Interior

Scenic Vista Management Plan for Yosemite National Park

Environmental Assessment
July 2010



Cover photo: El Capitan from “Postage Stamp” turnout on Southside Drive after vista clearing (NPS 1945)

United States Department of the Interior
NATIONAL PARK SERVICE
Yosemite National Park
P.O. Box 577
Yosemite, California 95389

IN REPLY REFER TO:
L7617 (YOSE)

JUL 16 2010

Dear Yosemite Friends:

I am pleased to provide the *Scenic Vista Management Plan Environmental Assessment* (EA) for Yosemite National Park. There is a need to restore vistas that made Yosemite world famous and created memorable experiences for millions of inhabitants and visitors. Prescribed burns and planned ignitions have benefitted the park in many ways, including clearing undergrowth that has blocked vistas. However, dense vegetation still obscures many vistas. The purpose of the *Scenic Vista Management Plan* EA is to develop a systematic program to document, protect and restore Yosemite's important viewing areas and vistas, using methods that that do not conflict with the natural processes that created them.

Public, tribal and agency consultation has played an important role in developing this plan. Public scoping for the Scenic Vista Management Plan took place from February 12 through March 20, 2009. The plan was presented at Open Houses in the park, at the Valley Visitor Center on January 28, 2009 and February 25, 2009. Open Houses with field walks in Yosemite Valley were attended by project managers and representatives on June 24 and July 29, 2009. Information has been available at this venue throughout public scoping and the development of the EA. Internal scoping took place concurrent with public scoping. The park initiated Tribal Scoping on February 12, 2009, with seven tribal groups that have connections to Yosemite. The planning team has integrated the comments and ideas generated during scoping into the range of alternatives for this plan.

The release of this plan commences a 30-day public comment period on the EA, which will be announced in the local newspaper, in the Yosemite National Park *Electronic Newsletter*, and on the project status website at http://www.nps.gov/yose/parkmgmt/vista.htm. Following careful consideration of all comments, if a Finding of No Significant Impact (FONSI) is approved, one of the alternatives or possibly a combination would be enacted. The EA can be viewed electronically on the Planning, Environment and Public Comment (PEPC) website at www.parkplanning.nps.gov/YOSE. The park no longer accepts electronic comments via the yose_planning@nps.gov email address. We encourage you to submit your comments electronically through PEPC, a web-based tracking system. You may also submit comments by mail or fax to:

Superintendent, Yosemite National Park
Attention: Scenic Vista Management Plan
P.O Box 577, Yosemite, California 95389

FAX: (209) 379-1294

The park considers all public comments in making a decision, which will be documented in a FONSI, if appropriate. If the FONSI is approved, the preferred alternative will be implemented in fall 2010.

We appreciate your interest and welcome your continued participation.

Sincerely,

Don L. Neubacher
Superintendent

Scenic Vista Management Plan for Yosemite National Park
Environmental Assessment

Lead Agency: National Park Service

ABSTRACT

Yosemite National Park is an icon of scenic grandeur. When set aside in 1864, Yosemite Valley and Mariposa Grove were the first scenic natural areas in the United States protected for public benefit and appreciation of the scenic landscape. In 2009, park staff inventoried 181 scenic vistas in Yosemite (outside of Wilderness) and found that encroaching vegetation completely obscured about one-third of the vistas, and partially obscured over half the vistas. Vegetation encroaches on these vistas for a number of reasons, including the exclusion of American Indian traditional burning, the suppression of lightning-ignited fire, and human-initiated changes to hydrologic flows. The purpose of the *Scenic Vista Management Plan* is to develop a systematic program to document, protect, and reestablish Yosemite's important viewpoints and vistas, consistent with the natural processes and human influences that created them. This plan considers which vistas the park would treat, how the park would prioritize treatments, and the extent and intensity of treatments. This plan will fulfill the park's obligations under the National Environmental Policy Act and analyze and define the park's obligations to cultural resources under the National Historic Preservation Act.

The *Scenic Vista Management Plan* describes and contrasts five alternative approaches to prioritizing and reestablishing scenic vistas. Alternative 1 describes existing conditions and serves as a basis for comparison among the alternatives. Under Alternative 1, there would be no consistent process to prioritize vistas for management or determine the intensity of treatments. About three vistas would be treated every ten years. The following Action Alternatives would replace this case-by-case approach to vista management. All Action Alternatives in this plan would support a scenic vista management program, rather than an individual project based approach. Additional vista points could be assessed, but the overall number of vista points managed would not change as described under each alternative.

Alternative 2 would adapt and use an evaluation tool, the Visual Resource Assessment (NPS 2008b), to assess the scenic value of each vista and prioritize vistas for treatment. Field crews would apply a standardized prescription for initial clearing. Park staff would clear and maintain about 104 obscured or partially obscured vistas, at a rate of about 30 per year. Alternative 3, the Preferred Alternative, would adapt and use the same tool, the Visual Resource Assessment (NPS 2008b), to prioritize vista points for treatment. The limits of vegetation clearing would differ from Alternative 2, as ecological conditions at each vista site would determine the intensity of vegetation clearing. Park staff would clear about 93 obscured or partially obscured vistas, at a rate of about 30 per year. Alternatives 4 and 5 provide the most flexibility in prioritizing and managing vistas. A team of park professionals would prioritize vistas for management using factors such as the popularity of a site or the facilities available. Under Alternative 4, park staff would apply a standardized clearing prescription as in Alternative 2. About 180 vistas would be considered for management. Under Alternative 5, park staff would use ecological conditions to determine the limits of vegetation clearing. About 167 vistas would be considered for management.

EXECUTIVE SUMMARY

Purpose and Need

Yosemite National Park is an icon of scenic grandeur. When set aside in 1864, Yosemite Valley and Mariposa Grove were the first scenic natural areas in the United States protected for public benefit and appreciation of the scenic landscape. Scenic quality is a core value embedded in the legislation that established the National Park Service in 1916:

> *Federal areas known as national parks . . . which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations*. (National Park Service Organic Act 1916)

In 2009, park staff inventoried 181 scenic vistas in Yosemite (outside of Wilderness) and found that encroaching vegetation completely obscured about one-third of the vistas, and partially obscured over half the vistas. Vegetation encroached on these vistas for a number of reasons, including the exclusion of American Indian burning, the suppression of lightning-ignited fire, and human-constructed changes to hydrologic flows. The purpose of the *Scenic Vista Management Plan* is to develop a systematic program to document, protect, and reestablish Yosemite's important viewpoints and vistas, consistent with the natural processes and human influences that created them. This plan considers which vistas the park would treat, how the park would prioritize treatments, and the extent and intensity of treatments.

Legislative and Planning Context

The *Scenic Vista Management Plan* must conform to federal law, regulation, and policy guidance. The National Park Service Organic Act of 1916 (as quoted above) and the National Park Service General Authorities Act of 1970 are key statutory directives. A framework of additional law, regulation, and policy also guides management of Yosemite National Park. The *Scenic Vista Management Plan* tiers off the 1980 *General Management Plan for Yosemite National Park*. The *General Management Plan* specifies the following management objectives to preserve, protect, and restore scenic resources:

- identify the major scenic resources and the places from which they are viewed;
- provide for the preservation or protection of existing scenic resources and viewing stations; and
- provide for historic views through vista clearing.

This plan will fulfill the park's obligations under the National Environmental Policy Act (NEPA), and analyze and define the park's obligations under the National Historic Preservation Act (NHPA).

Overview of the Alternatives

This environmental assessment presents and analyzes five alternatives. Alternative 1, the No Action Alternative, represents the continuation of existing conditions. The Action Alternatives (Alternatives 2, 3, 4, and 5) represent a reasonable range of options that satisfy the purpose and need for the project, meet relevant legal requirements, and satisfy park policies and guidelines.

The planning team inventoried about 181 scenic vista points for initial consideration in the Action Alternatives. Encroaching vegetation obscured the vista in 28% of these sites, partially obscured the vista in 54% of the sites, and did not obscure the vista in about 18% of the vistas. The alternatives consider which vistas the park would treat, how the park would prioritize treatments, and the extent

and intensity of treatments. The plan also considers whether vistas would require initial clearing or maintenance.

Alternative 1 describes existing conditions and serves as a basis for comparison among the alternatives, as required by NEPA. Park staff would prioritize vistas for treatment on an individual basis. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. Each vista treatment would undergo individual compliance, and any vista point in the park could be considered for action. The current rate for treatment is about three vistas every 10 years. There would not be a regular maintenance program.

Alternative 2 would adapt and use an evaluation tool, the Visual Resource Assessment (NPS 2008b), to assess the scenic value of each vista and prioritize vistas for treatment. Field crews would apply a standardized prescription for initial clearing. In total, park staff would clear and maintain about 104 obscured or partially obscured vistas, at a rate of about 30 vistas each year. Additionally, about 23 vistas would receive maintenance treatments.

Alternative 3, the Preferred Alternative, would adapt and use an evaluation tool, the Visual Resource Assessment (NPS 2008b), to prioritize vista points for treatment based on their scenic value. The ecological conditions at each vista site would determine the limits of prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured sites, at a rate of about 30 initial clearings per year. In addition, about 21 sites would receive maintenance treatments.

Alternative 4 is the most flexible in prioritizing and managing vistas. A team of park professionals would prioritize vistas for management on an annual basis. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for treatment. Once vistas were prioritized for treatment, park staff would apply a standardized clearing prescription, as in Alternative 2. About 180 vistas would be considered for management; about 32 would require maintenance, not initial clearing. Initial clearing treatments would take place at a rate of about 30 each year.

Alternative 5 emphasizes flexibility in prioritizing vistas for management, and uses ecological conditions for determining the extent and intensity of vista clearing. A team of park professionals would prioritize vistas for management on an annual basis in the same manner as in Alternative 4. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for management. The ecological conditions at each vista site would determine the prescription for vegetation clearing in the same manner as in Alternative 3. About 167 vistas would be considered for management; about 30 additional vistas would require maintenance. Initial clearing treatments would take place at a rate of about 30 each year.

Actions Common to All Action Alternatives

The following actions are common to Alternatives 2, 3, 4, and 5.

- All clearing actions would adhere to the target conditions specified in the *Yosemite Fire Management Plan* for target densities, gap distribution, and other vegetation attributes as maximum limits for clearing.
- Employee and visitor safety would be the highest priority during vista clearing operations. Tree felling operations would occur under the direction of the park forester, subject to strict supervisory control.
- Maximum sizes for the viewing area and feathering (a technique to manage the visual transition from cleared areas to the surrounding natural vegetation) would apply.
- Old growth trees and trees older than the establishment date for the vista would not be removed.
- Mechanical equipment would be chosen to minimize impacts based on the conditions at a site.

- Specific restrictions on the disposal of biomass would apply.
- Specific restrictions on noise levels near residential or visitor use areas would apply.
- Temporary road closures would generally not exceed one-half hour. Road closures would be scheduled in periods of low visitation when possible.
- Vista sites would be revegetated if necessary after clearing, by seeding or planting local native plants that would not obscure vistas.
- Each site would be evaluated as to whether it requires initial clearing or maintenance. Maintenance activities would be restricted to removal of trees smaller than 6 inches diameter breast height. Cleared sites would be maintained on a cycle of one to five years, depending on the assessed scenic value of the site.
- A National Park Service team would develop and review annual work plans for vista clearing treatments. Consultation would take place with Native American tribes and groups associated with the park. Work plans would be posted on the Yosemite National Park website and in the *Yosemite National Park Electronic Newsletter*. The final annual work plan would be released to the public before work commences.

Mitigation measures would apply to protect wildlife, as well as important habitat elements such snags, special-status species, air quality, riparian corridors, soils, and cultural resources.

Environmentally Preferred Alternative

The Council on Environmental Quality regulations implementing NEPA and NPS NEPA guidelines require that "the alternative or alternatives which were considered to be environmentally preferable" be identified (CEQ Regulations, Section 1505.2). Environmentally preferable is defined as "the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources" (CEQ 1981).

Alternative 3, Use Ecological Conditions to Determine Intensity of Vista Clearing, is the environmentally preferable alternative for scenic vista management in Yosemite National Park. Alternative 3 best protects, preserves, and enhances historic, cultural, and natural resources, as it provides a consistent and transparent methodology for prioritization of vistas for management, limiting undesirable and unintended consequences associated with vista clearing.

Consultation and Coordination

Public scoping for the *Scenic Vista Management Plan* took place from February 12 through March 20, 2009. The scoping announcement was emailed as part of the *Yosemite National Park Electronic Newsletter* and was printed in the *Mariposa Gazette*. The plan was presented at public open houses in Yosemite National Park, and a fact sheet was posted at the Yosemite Valley Visitor Center and on the park's webpage. The public outreach called for in Section 106 of the National Historic Preservation Act was integrated with the NEPA scoping process, in accordance with a Programmatic Agreement (PA) between the National Park Service at Yosemite, the California State historic preservation officer, and the Advisory Council on Historic Preservation (1999 PA)(NPS 2003b).

The park first initiated Tribal scoping with seven tribes and tribal groups that have connections to Yosemite on July 22, 2008. Contact with these groups has occurred regularly throughout the development of the plan. A letter regarding the plan was sent to each of the seven tribes in January 2009. The vista management project manager and the park's historic preservation officer and American Indian liaison met with members of four different tribal groups to present and discuss the plan in a series of meetings between January and June 2009.

Table ES-1. Summary of Alternatives

Components of Alternative	Alternative 1: No Action	*Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing*	*Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)*	*Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment*	*Alternative 5: Use Professional Team Assessment with Ecological Conditions to Determine Intensity of Vista Clearing*
Number of vistas considered for initial clearing (approximate)	All vistas in the park	104	93	180	167
Prioritization method	Not defined	Visual Resource Assessment	Visual Resource Assessment	Professional Team Assessment	Professional Team Assessment
Basis for determining clearing extent and intensity	Not defined	Scenic Value	Defined by local vegetation type and ecological values	Scenic Value	Defined by local vegetation type and ecological values
Actions acceptable in Wilderness	Not defined	None	None	None	None
Maximum clearing limits	Not defined	Maximum limits for clearing as specified in the Yosemite Fire Management Plan (NPS 2004b). Action Alternatives specify consistent maximum sizes for viewing areas and feathering.			
Vista Clearing – high-value meadows	Not defined	All vegetation in foreground and midground could be removed (if consistent with mitigation measures).	Clearing restrictions on specific species including whitebark pine, sugar pine, and California black oak trees.	All vegetation in foreground and midground could be removed (if consistent with mitigation measures).	Clearing restrictions on specific species including whitebark pine, sugar pines, and California black oak trees.
Vista Clearing – medium-value meadows	Not defined	Less intensive clearing in foreground and midground. No snag removal unless critical to vista.	Clearing restrictions on specific species including whitebark pine, sugar pine, and California black oak trees. No tree clearing in foothill woodland zones.	Less intensive clearing in foreground and midground. No snag removal unless critical to vista.	Clearing restrictions on specific species including whitebark pine, sugar pine, and California black oak trees. No tree clearing in foothill woodland zones.
Vista Clearing – low-value meadows	Not defined	Ecological conditions considered. Vistas could remain limited or filtered.	No initial clearing actions.	Ecological conditions considered. Vistas could remain limited or filtered.	No initial clearing actions.

Components of Alternative	**Alternative 1: No Action**	***Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing***	***Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)***	***Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment***	***Alternative 5: Use Professional Team Assessment with Ecological Conditions to Determine Intensity of Vista Clearing***
Removal of old growth trees	Not defined	No removal of old growth trees or trees older than the establishment date for the vista.			
Annual work plans	None	Annual work plans would be developed and posted for public viewing.			
Meadow management	Not defined	Trees blocking vistas removed from nonwilderness meadows to 1997 meadow extent.	Trees blocking vistas removed from nonwilderness meadows to 1997 meadow extent.	Trees blocking vistas removed from nonwilderness meadows to 1997 meadow extent.	Trees blocking vistas removed from nonwilderness meadows to 1997 meadow extent.

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I PURPOSE AND NEED

It is in no scene or scenes the charm consist, but in the miles of scenery where cliffs of awful height and rocks of vast magnitude and of varied and exquisite coloring are banked and fringed and draped and shadowed by the tender foliage of noble and lovely trees and bushes, reflected from the most placid pools, and associated with the most tranquil meadows, the most playful streams, and every variety of soft and peaceful pastoral beauty. This union of the deepest sublimity with the deepest beauty of nature, not in one feature or another, not in one part or one scene or another, not any landscape that can be framed by itself, but all around and wherever the visitor goes, constitutes the Yo-Semite the greatest glory of nature.

-Frederick Law Olmsted in "Preliminary Report to the Board of Yosemite Commissioners" (Olmsted 1865)

Beyond the sheer enjoyment of scenery, a heightened aesthetic sensibility may have inspired in many a deeper understanding of, and concern for, the natural environment. This benefit defies quantification, but surely it has had consequences of immense values both for individuals and the nation.

-Richard West Sellers in *Preserving Nature in the National Parks* (Sellars 1997)

Background

Yosemite National Park is an icon of scenic grandeur. Yosemite Valley and the Mariposa Grove of Big Trees were the first scenic natural areas protected for the enjoyment and benefit of the American public (Yosemite Land Grant 1864). Preservation of scenic quality is embedded in the National Park Service Organic Act of 1916 that created the National Park Service, which directed it to "conserve the scenery and the natural and historical objects… for the enjoyment of future generations."

During the development of Yosemite, an important consideration was ensuring that park visitors would be able to experience the park's scenic wonders. For example, roads were aligned, buildings were sited, and trails were constructed to allow visitors visual access to Yosemite National Park's natural wonders (DuBarton 2007, Davis 2004). The outstanding scenic resources of Yosemite National Park include:

- peaks, canyons, cliffs, domes, rivers, immense waterfalls, meadows, wildlife, and forests;
- a unique assemblage of massive granite domes and unique geologic features, resulting from a rich glacial and volcanic history. Three of the largest exposed granite monoliths in the world are in Yosemite Valley;
- two Wild and Scenic Rivers: the Tuolumne and the Merced. The upper watersheds of both rivers are preserved within the park boundary;
- Tuolumne Meadows, which is the largest intact subalpine meadow complex in the Sierra Nevada accessible to the general public; and

- significant National Park Service Rustic Style of architecture, of which Yosemite is the birthplace. The park is also home to the first National Park Service landscape design office providing design services for all parks in the West. Within the park, five buildings are National Historic Landmarks and more than 600 structures are listed in or considered eligible for listing in the *National Register of Historic Places*, including three historic and twelve prehistoric archaeological districts.

In 2009, park staff inventoried 181 scenic vistas outside of wilderness in Yosemite and found that encroaching vegetation completely obscured about one-third of the vistas and partially obscured over one-half of the vistas. This occurred for a number of reasons including the exclusion of traditional American Indian-managed fires, suppression of lightning-ignited fire, and human-constructed changes to hydrologic flows. The purpose of this plan is to develop a systematic program to document, protect, and reestablish Yosemite's important viewpoints and vistas, consistent with the natural processes and human influences that created them. This plan considers which vistas the park would treat, how the park would prioritize treatments, and the extent and intensity of treatments. This plan does not address vistas in wilderness, an area that covers over 94% of the park.

The 1980 *General Management Plan for Yosemite National Park* (GMP) establishes five overall goals for the management of Yosemite National Park, one of which is to "reclaim priceless natural beauty." The *Scenic Vista Management Plan* (SVMP) tiers off the GMP and builds on the following management objectives specified in the GMP to preserve, protect, and restore scenic resources:

- identify the major scenic resources and the places from which they are viewed;
- provide for the preservation or protection of existing scenic resources and viewing stations; and
- provide for historic views through vista clearing. (NPS 1980a)

Purpose of the Proposed Plan

The purpose of the *Scenic Vista Management Plan for Yosemite National Park* is to provide a systematic program for documenting, protecting, and reestablishing Yosemite's important viewpoints and vistas, consistent with the natural processes and human influences that created them. The plan recognizes that although many vistas in the park have been diminished by human interruption of natural or traditional cultural processes, many other vista points exist as a result of human intervention. This plan would:

- reestablish and maintain important historic views;
- develop an objective process for selecting and ranking vistas for treatment;
- develop target conditions and identify appropriate vegetation management actions to restore scenic vistas; and
- reestablish scenic vistas, whenever practicable, by restoring natural species composition, structure, and function to systems, using traditional American Indian vegetation management practices, including hand pulling and fire.

Need for the Proposed Plan

The SVMP is needed to reestablish and maintain Yosemite National Park's iconic views, vistas, and discrete lines of sight that are obscured by vegetation growth. When the park was originally set aside, vegetation patterns were much more open, with unblocked views and open meadows. Open oak woodlands allowed for easy viewing of granite walls and waterfalls in Yosemite Valley. The mix of meadows with low and high density forests throughout the park was maintained by natural (unplanned ignition) wildfires that burned in mosaic patterns (Ernst 1943, 1961; Greene 1987).

Prior to the park's settlement by European Americans, American Indians in Yosemite had a long tradition of periodically burning Yosemite Valley, and other meadows, in conjunction with other traditional land management practices. Periodic burns kept the meadows open, encouraged regrowth of indigenous foods and materials, and maintained the California black oak (*Quercus kelloggii*) woodlands. Land management practices that followed have altered the park's scenery over the past 150 years. Fire suppression and fire exclusion were begun by early settlers in the late 1800s and continued by park managers for decades. These practices resulted in the replacement of many original oak woodland areas with aggressive, shade-tolerant coniferous species such as incense-cedar and white fir (Greene 1987; NPS 2004b). This change in once open views was first noted in Yosemite Valley in the 1880s (Hutching 1990).

Later practices of constructing parking lots and water diversion ditches in and adjacent to meadows unintentionally damaged meadow integrity by lowering water tables, further encouraging unnatural growth of large trees in dense stands (Ernst 1943; NPS 2004b).

Figure I-1. Photograph by Watkins in 1866 Near Union Point of the Valley Floor (Ernst 1943)

The loss of scenic viewing opportunities has resulted from these land management practices (Ernst 1943; Greene 1987). There are few places on the Valley floor from which upper and lower Yosemite Falls are visible. The "Postage Stamp" vista of El Capitan, made famous in the 1934 one-cent postage stamp engraving from an 1868 Carleton Watkins photograph, is now obscured by conifers (NPS 2010b). Many vistas are obscured due to conifer encroachment in meadows (Figures I-1, I-2). Two-thirds of the meadowland in Yosemite Valley has also been lost to conifer encroachment since 1865 (Ernst 1961).

Vegetation patterns in Yosemite continue to change due to stressors that originate outside the park borders. Climate change is expected to have a broad effect on natural conditions in the park. Components of Yosemite National Park's natural environment are currently exhibiting, or are projected to exhibit, shifting in natural conditions, including vegetation zones, fire regimes, hydrologic regimes, and wildlife habitats. These condition shifts might include an upward movement of vegetation zones toward higher elevations, an increase in fire frequency in some vegetation types and elevations, an increase in invasive plant cover, a shift toward much drier hydrologic regimes, and a shift in the abundance and distribution of both plant and wildlife species, due to changing habitat boundaries.

The SVMP is needed for several reasons, which are listed below.

- Conifers, because of historic manipulation and fire suppression, have encroached on meadows, creating dense, closed canopies in historic meadows (Ernst 1943; Greene 1987).
- While prescribed burns and planned ignitions have restored vistas in the park, many views continue to be obscured by dense growth (NPS 2010b).
- The visitor experience is negatively affected by the loss of viewing opportunities.

- Remaining vista points frequently exhibit crowding, compromising visitor safety.
- If no action is taken, the park's iconic views will be further diminished or lost.

Goals for the Proposed Plan

The plan is expected to continue for 10-15 years or until supplanted by a newer plan. Actions associated with this program will be continuous and may factor in additional locations and information not included in this document.

The SVMP program will:

- provide a decision making process proposed for prioritizing and determining how vistas will be managed;
- allow adaptation to changing resource conditions and new data;
- identify methods to manage conifers and other species that obscure important vistas and affect meadows;
- establish best management practices to minimize adverse effects of visitor use and administrative actions on scenic resources;
- describe what trees and brush may need to be removed to reestablish vistas;
- continue to inventory viewpoints and to document current and previous conditions;
- though it may not have a significant impact during the expected life of this plan, acknowledge and plan for effects that climate change may have on scenic resources;
- identify vista points to be released to succession due to natural processes, being rendered unusable due to safety concerns, or being otherwise unsuitable for reestablishment;
- consider replacement of current viewpoints with new viewpoints featuring similar perspectives and visitor use context, but at safer or more environmentally sustainable locations;
- describe a program that continues to maintain vistas; and
- evaluate and prioritize research needs and management actions that ensure park resources and values remain.

Related Legislative and Executive Mandates

Yosemite Land Grant of 1864

This legislation granted the Yosemite Valley and the Mariposa Grove of Big Trees from the federal government to the state of California "upon the express conditions that the premises shall be held for public use, resort, and recreation; inalienable for all time." This was the first time land in the United States was preserved for its scenic values and for public benefit. (In 1890, over 1,400 square miles of land surrounding Yosemite Valley and the Mariposa Grove of Big Trees became Yosemite National Park. In 1905, Yosemite Valley and the Mariposa Grove of Big Trees were integrated into Yosemite National Park.)

Figure I-2. Photograph Near Union Point of the Valley Floor (NPS 2009)

National Park Service Organic Act, 1916 (16 USC 1, 2, 3, and 4)

This Act established the National Park Service and set the organization's primary mission:

> *to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.*

Discussion of the meaning of impairment in the planning context is included in Chapter 3, and in more detail in NPS *Management Policies* (NPS 2006).

The Organic Act also includes the following text:

> *He* (Director of the National Park Service) *may also…dispose of timber in those cases where in his judgment the cutting of such timber is required in order to control the attacks of insects or diseases or otherwise* ***conserve the scenery*** *or the natural or historic objects in any such park, monument, or reservation. He may also provide … for the destruction… of such plant life as may be detrimental to the use of any of said parks, monuments, or reservations.* (emphasis added)

1970 National Park Service General Authorities Act (as amended in 1978 – Redwood Amendment)

This act reaffirms that the NPS Organic Act of 1916 is, and shall remain, the primary guiding document for the National Park Service. This act prohibits the NPS from taking actions that could cause any derogation of the values for which the parks were established (except as modified by Congress in the enabling legislation for individual park units). Thus, every NPS unit is to be managed to the same standard, whether that unit be a national park, a national monument, or any other designation.

> *Congress further reaffirms, declares, and directs that the promotion and regulation of the various areas of the National Park system… shall be consistent with and founded in the purpose established by the first section of the Act of August 25, 1916, to the common benefit of all the people of the United States. The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directed and specifically provided by Congress.*

The 2006 NPS *Management Policies* define "derogation" as meaning the same thing as "impairment," establishing a common standard.

Wilderness Act of 1964 (16 U.S.C. 1131-1136)

This act established a national Wilderness System, requiring federal land management agencies to review all holdings for suitability. Under this law, wilderness is defined as

> *an area where the earth and its community of life are untrammeled by man, where man himself is but a visitor who does not remain….an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation…protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) …is of sufficient size to make practical its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, or historical value.*

Some actions within wilderness are prohibited, although exceptions can be made when necessary to deal with health and safety emergencies, or when such exceptions would be the minimum requirement to manage the area as wilderness:

> *There shall be no commercial enterprise and no permanent road within any wilderness area designated by this Act and except as necessary to meet minimum requirements for the administration of the area for the purpose of this Act (including measures required in emergencies involving the health and safety of persons within the area), there shall be no temporary road, no use of motor vehicles, motorized equipment or motorboats, no landing of aircraft, no other form of mechanical transport, and no structure or installation within any such area.*

National Environmental Policy Act (NEPA) (42 USC 4341 et seq.)

NEPA requires the identification and documentation of the environmental consequences of federal actions. Regulations implementing NEPA are set by the President's Council on Environmental Quality (CEQ) (40 CFR Parts 1500-1508). CEQ regulations establish the requirements and process for agencies to fulfill their obligations under the Act.

National Historic Preservation Act of 1966 (NHPA) (16 USC 470)

Section 106 of the NHPA directs federal agencies to take into account the effects of any undertaking on historic properties. "Historic property" is defined as any district, building, structure, site, or object that is eligible for listing in the *National Register of Historic Places* because the property is significant at the national, state, or local level in American history, architecture, archeology, engineering, or culture (including sites of significant cultural or religious importance to American Indians). Section 106 also provides the Advisory Council on Historic Preservation and the state historic preservation officer (SHPO) an opportunity to comment on assessment of effects by the undertaking. Yosemite National Park's Section 106 review process is governed by the 1999 *Programmatic Agreement Among the National Park Service at Yosemite, the California State Historic Preservation Officer and the Advisory Council on Historic Preservation Regarding Planning, Design, Construction, Operations And Maintenance* (1999 PA) (NPS 2003b) developed in consultation with associated American Indian tribes and the National Trust for Historic Preservation.

Wild and Scenic Rivers Act (PL 90-542; 16 USC 1271-1287)

The national wild and scenic rivers system was established in 1968 by the National Wild and Scenic Rivers Act, which was intended by Congress to balance the existing policy of building dams on rivers for water supply, power, and other benefits, with a new policy of protecting the free-flowing character and outstanding values of other rivers for the benefit and enjoyment of present and future generations. It requires federal agencies to review all holdings for suitability and the protection of rivers in the system:

> *Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its esthetic, **scenic**, historic, archeological, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area.* (emphasis added)

The Tuolumne and Merced rivers are components of the national wild and scenic river system due in part to their outstanding scenic value. The Tuolumne River was designated in 1984 and the Merced River was designated in 1987.

Archeological Resources Protection Act (ARPA) (16 USC 470aa- 470ll)

The Archeological Resources Protection Act of 1979 prohibits unauthorized excavation of archeological sites on federal land, as well as other acts involving cultural resources, and implements a permitting process for excavation of archeological sites on federal or Indian lands (see regulations at 43 CFR 7). ARPA also provides civil and criminal penalties for removal of, or damage to, archeological and cultural resources.

No excavation or subsurface disturbance actions are considered in this plan. This act will apply to any incidental disturbance that could occur.

Native American Graves Protection and Repatriation Act (NAGPRA) (25 USC 3001 et seq.)

The Native American Graves Protection and Repatriation Act of 1990 (see regulations at 43 CFR 10) provides for the protection and repatriation of Native American human remains and cultural items, and requires notification of the relevant Native American tribe upon accidental discovery of cultural items.

No excavation or subsurface disturbance actions are considered in this plan. This act will apply to any incidental disturbance that could occur.

American Indian Religious Freedom Act (AIRFA) (42 USC 1996)

The American Indian Religious Freedom Act of 1979 preserves for American Indians and other indigenous groups the right to express traditional religious practices, including access to sites under federal jurisdiction. Regulatory AIRFA guidance is lacking, although most land-managing federal agencies have developed internal procedures to comply with the Act.

Cultural practices related to AIRFA are discussed and analyzed in Chapter 3.

Executive Order No. 13007: Indian Sacred Sites

Executive Order 13007 directs federal agencies with statutory or administrative responsibility for the management of federal lands, to the extent practicable and permitted by law, to accommodate access to and ceremonial use of Indian sacred sites by American Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites.

Traditional cultural properties are discussed and analyzed in Chapter 3.

Policy Context

National Park Service Management Policies 2006

NPS Management Policies is the service-wide policy document of the NPS. The following section is particularly relevant:

> *9.1.1.3 Protection of Cultural Values—When important cultural resources are present, efforts will be made to use existing contributing structures.*

National Park Service Director's Order 28 Cultural Resource Management Guidelines (DO 28)

Chapter 7 of DO 28 discusses cultural landscape management and the degree of physical change recommended while preserving cultural landscapes:

> *Cultural landscape management involves identifying the type and degree of change that can occur while maintaining the historic character of the landscape. The identification and management of an appropriate level of change in a cultural landscape is closely related to its significance. In a landscape significant for its association with a specific style, individual, trend, or event, change may diminish its integrity and needs to be carefully monitored and controlled. In a landscape significant for the pattern of use that has evolved, physical change may be essential to the continuation of the use. In the latter case, the focus should be on perpetuating the use while maintaining the general character and feeling of the historic period(s), rather than on preserving a specific appearance.*

Park Planning Context

General Management Plan for Yosemite National Park, 1980 (GMP)

The GMP provides overall management direction for Yosemite National Park. It includes specific management objectives for scenic vistas (see Introduction) *and* a description of scenic resources with an analysis of the role of scenic resources in the creation of the park. Scenic resources figure prominently in the original preservation of Yosemite and are a focus of management efforts. The SVMP is tiered from the GMP.

Resource Management Plan: Yosemite National Park, 1993

The 1993 *Resource Management Plan* recommended that scenic vistas be addressed as follows:

> *Vista Management Mitigation: Implement vista management activities for the preservation of historic and scenic vistas.*
>
> *Restoration: Prune or remove intrusive vegetation which has grown to block or obscure scenic resources at scenic vista points or areas identified in the park's current Scenic Vista Management Plan and Vegetation Management Plan.*
>
> *Education: Provide interpretive materials and programs to communicate the park's scenic management policies and procedures for restoring and maintaining scenic vista points or areas.* (NPS 1993)

Yosemite Vegetation Management Plan, 1997 (VMP)

The *Vegetation Management Plan* (VMP) noted that little progress had been made in vista management since the 1980 GMP, and included a description of scenic resources in Yosemite. It also provided action strategies and priorities for scenic vista management. Priorities included

- preparing and implementing a vista management plan that evaluates historic landscapes, vistas, and scenic values;
- prioritizing vistas for establishment, preservation, restoration, and maintenance of high value views; and
- ensuring appropriate design for all vista areas for resource protection and visitor management (NPS 1997a).

Yosemite Fire Management Plan EIS, 2004 (FMP)

The *Fire Management Plan* (FMP) describes vegetation types in the park and sets target conditions for five of those vegetation types. Target conditions include stem density (split into separate targets for trees larger or smaller than 31.5 inches diameter at breast height [dbh]), species composition, canopy gap distribution, and fuels loading. Target conditions are described in Appendix H (NPS 2004b).

The SVMP tiers off the *Yosemite Fire Management Plan* and uses the same vegetation classification schemes and vegetation target conditions.

Tunnel View Overlook Rehabilatation Project, 2007

The Tunnel View Overlook is one of the most popular vistas in Yosemite National Park. Tunnel View Overlook Rehabilitation Project remedied longstanding vehicle and pedestrian safety issues, corrected drainage deficiencies, provided clear circulation patterns for pedestrians and vehicles, enhanced and maintained viewing opportunities for visitors, provided accessibility to viewing areas, corrected safety problems associated with the Inspiration Point trailhead, and addressed sanitation issues, while maintaining the naturalistic, rustic character and integrity of this historic site. A Finding of No Significant Impact (FONSI) was signed by the Regional Director in December, 2007. Actions were completed in 2008.

Merced Wild and Scenic River Comprehensive Management Plan, EIS (Merced River Plan) and Tuolumne Wild and Scenic River Comprehensive Management Plan, EIS (Tuolumne River Plan)

Yosemite National Park is home to two federally designated wild and scenic rivers: the Tuolumne (designated by Congress in 1984) and the Merced (designated in 1987). To adhere to the requirements of the Wild and Scenic Rivers Act, the NPS is preparing comprehensive management plans for both rivers. When completed, these documents will guide future managers in how best to ensure the protection and enhancement of each river's Outstandingly Remarkable Values and free-flowing condition. The plans will also determine specific programs and activities (including land uses, restoration, and levels of facilities) needed to meet river protection goals.

The Merced and Tuolumne rivers possess superlative scenic values that made them worthy of protection under the Wild and Scenic Rivers Act. The management plans for both rivers will outline overall goals for protecting and enhancing scenic values. The SVMP — which details annual work plans and specific treatments needed to preserve views — will derive its overall guidance from both the Merced and Tuolumne river plans, once they are completed.

Programmatic Agreement Among the National Park Service at Yosemite, the California State Historic Preservation Officer, and the Advisory Council on Historic Preservation

Under this programmatic agreement (NPS 2003b) (regarding Planning, Design, Construction, Operations and Maintenance, Yosemite National Park, California, with October 2003 Amendment 1), the park has the responsibility to review most undertakings without further review by the state historic preservation officer (SHPO) or the Advisory Council on Historic Preservation (ACHP), provided the stipulations of the agreement have been fulfilled. The agreement stipulates required consultation with SHPO, ACHP, Indian tribes, and interested persons when an undertaking may affect a National Historic Landmark, "or affect properties of national significance listed in the National Register of Historic Places," affect a human burial, adversely affect a traditional cultural property, generate significant public controversy, or involve a disagreement among the park, the SHPO, any Indian Tribe, or any interested

persons regarding proposed use of standard mitigating measures. The agreement applies to undertakings performed by NPS lessees, permittees, concessioners, cooperators, and park partners. It also requires Yosemite to "make every reasonable effort to avoid adverse effects to Historic Properties identified . . . through project design, facilities' location or other means" and to document avoidance alternatives through the NEPA process (NPS 2003b).

Public Participation and Scoping

Public scoping for the SVMP took place from February 12, 2009 through March 20, 2009. One hundred thirty-five scoping announcements were mailed to interested groups and individuals. The scoping announcement was included in the *Yosemite National Park Electronic Newsletter*, which has over 7000 subscribers. A press release was printed in the *Mariposa Gazette* on January 26, 2009. A fact sheet was made available at the park's Visitor Center and on the Yosemite National Park webpage. The plan was presented at public open houses on January 28, 2009 and again on February 25, 2009 in the Yosemite Valley Visitor Center.

The park received a total of nine comments. They included comments from two different chapters of the Sierra Club (Tehipite Chapter and Yosemite Committee), one letter from Central Sierra Environmental Resource Center (CSERC), and six comments from individuals.

An interdisciplinary team analyzed the letters and broke them down into individual concerns (NPS 2009d). These suggestions are listed below.

- Limit the scope of the SVMP.
- Allow the National Park Service to continue their work without making them go through the environmental assessment process.
- Avoid creating new viewing areas.
- Manage scenic views using a holistic approach.
- Address vista management in Yosemite to restore and maintain the quality of the visitor's visual experience.
- Consider mechanical thinning in addition to the use of fire for the removal of large trees.
- Minimize any runoff of petroleum into ephemeral streams when conducting major structural grading or paving at scenic vista points.
- Use native plantings to ameliorate unsightly views and improve near and middle views of a scenic vista.
- Be willing to remove trees when they are young to improve views and alleviate the issue of removing large trees.
- Retain mature oaks.
- Intensively remove trees in dense thickets to open up views.
- Consider safety and impacts on other resources or facilities.
- Consider impacts of burning and smoke on the visitor experience and visitors' ability to see vistas.
- Consider all views — near and middle as well as distant.
- Consider the creation of new vista points along part of Tioga Pass Road.
- Encourage visitors to use foot travel to see the views of Yosemite.
- Refrain from clearing vistas in designated wilderness.
- Avoid the use of mechanized equipment within areas of the park managed as wilderness.
- Refrain from enhancing scenic vistas along wilderness boundaries if doing so causes more than minor degradation to wilderness values.

- Use natural vegetation to restore aesthetic conditions of park campgrounds.
- Identify trailheads and destinations that guide visitors to alternative viewpoints accessed without vehicles.
- Ensure accuracy in interpretive displays.
- Minimize the visual impacts of construction activity.
- Consider removal of structures in order to restore views.
- Consider changing the name of Tunnel View to "Valley Overlook."
- Evaluate what would be needed to restore a portion of the El Capitan Moraine.
- Include correct American Indian history in planning documents.

Internal scoping was concurrent with public scoping. Representatives from all park divisions attended a series of core team meetings to identify issues and participate in the development of the plan, a process that continued throughout the development of the plan.

After scoping was completed, two internal workshops were held to develop action alternatives. The first meeting occurred on June 16, 2009 and developed the alternative described as Alternative 2. The second meeting occurred on June 29, 2009 and developed the alternative described as Alternative 4. In later internal meetings, project managers combined different parts of alternatives 2 and 4 to create alternatives 3 and 5.

A Choosing by Advantages (CBA) workshop was held on October 21, 2009 to select a preferred alternative.

American Indian Scoping and Consultation

Yosemite National Park is associated with seven tribal groups that have connections to Yosemite.

The park initiated tribal scoping on July 22, 2008 at the All-Tribes meeting in Wawona, California. Contact with tribal groups has occurred intermittently throughout the plan and is regarded as a government-to-government relationship.

A letter was sent to each of the seven tribes in January 2009, along with the fact sheet. The vista management project manager presented an announcement of the planning process to the Tuolumne Band of Mi-Wuk on February 4, 2009. The park's historic preservation officer and American Indian liaison presented the same announcement to the North Fork Rancheria of Mono Indians on February 12, 2009. On April 2, 2009, the project manager met with the Mariposa Tribal Council, and on June 10, 2009, the project manager and the historic preservation officer and American Indian liaison met with representatives of the North Fork Mono Rancheria in the Wawona area.

The common themes that emerged during tribal scoping are listed below.

- Yosemite Valley was once much more open than it is now.
- California black oak trees are very important, and they seem to be in decline.
- Clearing the understory from under California black oaks is essential for the health of the trees.
- The park needs to make a greater effort to preserve existing black oaks and to encourage the regeneration of oak woodlands.
- Fire management is very important; the park needs to have more prescribed fires, especially as a way of preserving California black oak habitat.
- Conifer growth has reduced the number of meadows in the Valley and blocked many views.

Issues and Concerns Outside the Scope of This Plan

All but three issues and concerns identified during public scoping are addressed in this document. The issue regarding renaming Tunnel View "Valley Overlook" is outside the scope of this document. The SVMP considers the condition and management of vistas, but does not address naming conventions.

Restoring the El Capitan Moraine would likely have an impact on scenic resources, but represents a landscape-scale action, rather than a view as seen from a specific vista point. Landscape scale actions are outside of the scope of the SVMP.

This plan focuses on the general concept that American Indians burned Yosemite Valley and other areas nearly every year, on the effects of those fires, and on the visual impacts of discontinuing the fires. In that context, the details regarding which tribe or group conducted the burning is less critical. This plan does not address details concerning which tribal groups were present at specific times or places, or details of their practices. Park management has announced the intent to review the history of American Indians in the park to ensure that the park is presenting correct information.

II ALTERNATIVES

Introduction

This chapter describes four Action Alternatives and a No Action alternative, intended to meet the goals of the *Scenic Vista Management Plan* (SVMP). The planning area addressed by the alternatives encompasses Yosemite Valley, nonwilderness meadows, and primary road corridors. It does not address vista points in designated Yosemite Wilderness (over 94% of the park). An interdisciplinary team representing each division of Yosemite National Park guided the alternative development process, integrating input from public scoping, American Indian tribes and groups, and interested agencies and organizations. Park managers expect the lifespan of the plan to be ten to fifteen years.

The planning team inventoried about 181 scenic vista points for initial consideration in the Action Alternatives. Encroaching vegetation obscures the vista in 28% of these sites, partially obscures the vista in 54% of the sites, and does not obscure the vista in about 18% of the sites. The alternatives consider which vistas the park would treat, how the park would prioritize treatments, and the extent and intensity of treatments. The plan also considers whether vistas would require initial clearing or maintenance (removal of trees smaller than 6 inches diameter at breast height).

The alternatives are arranged as follows (Figure II-1):

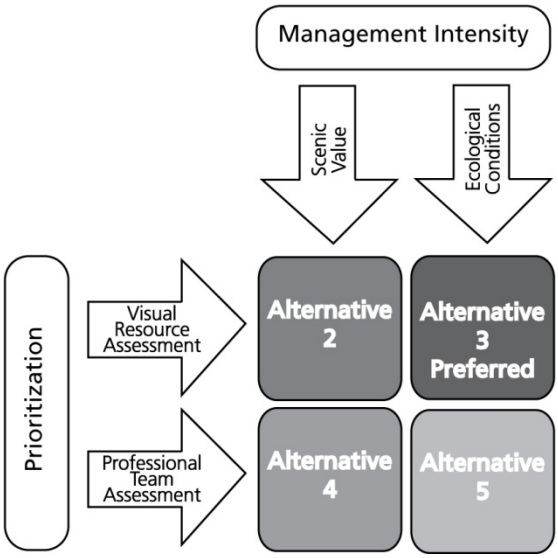

Figure II-1. Concepts Guiding the Action Alternatives (NPS 2010)

- **Alternative 1: No Action**
  This alternative represents existing conditions and serves as a basis for comparison among the alternatives. Park staff would prioritize vistas for treatment on an individual basis. There would be no consistent process to prioritize vistas for management or to determine the intensity of treatments. Each vista treatment would undergo individual compliance, and any vista point in the park could be considered for action. The current rate for treatment is about three vistas every ten years. There would not be a regular maintenance program.

- **Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing**
  Park staff would adapt and use an evaluation tool, the Visual Resource Assessment (NPS 2008b), to assess the scenic value of each vista and prioritize vistas for treatment. Field crews would use a standardized prescription for initial clearing. Park staff would clear and maintain

about 104 obscured or partially obscured vistas, at a rate of about 30 vistas each year. Additionally, about 23 vistas would receive maintenance treatments.

- **Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)**
  Park staff would adapt and use an evaluation tool, the Visual Resource Assessment (NPS 2008b), to prioritize vista points for treatment based on their scenic value. The ecological conditions at each vista site would determine the limits of prescription for vegetation clearing (Table II-4). Park staff would clear and maintain about 93 obscured or partially obscured sites, at a rate of about 30 initial clearings per year. In addition, about 21 sites (18%) that may not need initial clearing could be maintained. Field crews would use a standardized clearing prescription to give initial clearing treatments to vistas with medium and high values (Table II-2). Low-value vistas could not be initially cleared; they would only be maintained as they currently exist.

- **Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment**
  This alternative is the most flexible in prioritizing and managing vistas. A team of park professionals would prioritize vistas for management on an annual basis. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for treatment. Once vistas were prioritized for treatment, park staff would apply a standardized clearing prescription as in Alternative 2 (Table II-2). About 180 vistas would be considered for management, and about 32 (18%) would require maintenance, not initial clearing. Initial clearing treatments would take place at a rate of about 30 each year.

- **Alternative 5: Use Professional Team Assessment with Ecological Conditions to Determine Intensity of Vista Clearing**
  This alternative emphasizes flexibility in prioritizing vistas for management, and uses ecological conditions for determining the extent and intensity of vista clearing. A team of park professionals would prioritize vistas for management on an annual basis in the same manner as in Alternative 4. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for management. The ecological conditions at each vista site would determine the prescription for vegetation clearing in the same manner as in Alternative 3 (see Table II-4). About 167 vistas would be considered for management, and about 30 (18%) additional vistas would require maintenance. Initial clearing treatments would take place at a rate of about 30 each year.

Visual Resource Assessment

The Visual Resource Assessment tool (VRA) assesses the value of vistas using predefined weighted criteria and ends with a quantified result (see Appendix A). The rating criteria are primarily scenic values – the vividness, uniqueness, access, and intactness of a vista site. This evaluation method was selected for its consistency, predictability, and transparency. It was originally developed by the Blue Ridge Parkway and would be adapted for use in Yosemite under this plan (Appendix A). Other NPS units have adapted this system, including the Mississippi National River and Recreation Area, and the Grant-Kohrs Ranch National Historic Site.

Under alternatives 2 and 3, the Visual Resource Assessment would be a foundation for prioritizing vista points for management. The Visual Resource Assessment method:

- utilizes tested assessment methodologies;
- quantifies the qualities of a viewpoint in a manner that is simple to identify, straightforward, and measurable;

- ensures that the process is easily understood by nondesign professionals; and
- assesses view points on site.

The Visual Resource Assessment uses the following criteria to choose and prioritize vista sites:

Vividness is the degree to which a site is memorable, or the "Oh, wow" factor. It is measured in terms of the presence and amount of *expansiveness*, *framing*, *variety* (of surface patterns and textures), a *focal point*, *depth*, and *ephemeral images*.

Figure II-2. Half Dome is visible from a variety of vista points such as this view from Olmsted Point off Tioga Road. This vista received high scores in vividness, uniqueness, access, and intactness. (NPS 2009)

Uniqueness measures the rarity of a vista. Vistas with an object that can be seen from only one point or unique vistas are rated higher. Uniqueness is measured in terms of the following factors: *geographic; iconic view; number of features noted in comprehensive management plans; special uses; interpretive or educational ability;* and *historic*. Features may be added or changed in the future to allow for any future comprehensive planning documents.

Access considers the *ease of access* and *infrastructure present*.

Intactness refers to the level of incompatible and intrusive change from an idealized landscape. Yosemite is a scenic park and is known for its dramatic natural features. Within Yosemite, an idealized landscape is considered a vista free of buildings and structures in the distant view. This goal is not often achieved, but it underscores the importance of a natural landscape in Yosemite. Intactness refers to the condition of the area being viewed, not to the condition of the vista point.

Scoring

The scoring team assigns points for each factor, up to a total of 18 possible points (see Appendix A). The total score is used to categorize a vista as having high, medium, or low value (see Table II-1). As staff continue to assess and manage vistas, Visual Resource Assessment categories could be modified to maintain a balance of sites and best reflect scenic vistas in the park.

Table II-1. Visual resource assessment values in Yosemite

Vista Value	Score (out of a possible 18 points)	Percent of total vistas
High	10.0 and above	30%
Medium	7.01 – 9.99	40%
Low	7.0 and below	30%

How Vistas Are Characterized in This Plan

Vistas can be static or dynamic:

- Static vista – viewed while in a stationary position, such as standing or sitting in front of a viewpoint
- Dynamic vista – viewed while moving in a vehicle, either in front of, or perpendicular to, the lane of travel

Visitors enjoy the view from the "viewing area." In many cases, this corresponds to designed and constructed viewing platforms such as boardwalks or other areas delineated by fencing, rockwork, or paving (Figures II-3, II-4). Under the Action Alternatives, the maximum width of a vista is determined by the value of a site (high, medium, or low); see "Actions Common to all Action Alternatives."

The maximum depth of a vista action varies among the alternatives. The action alternatives consider a range of treatments for the foreground and middle ground of a vista (Figure II-3). No actions would take place in the background of vistas. This plan defines these terms as follows:

- Foreground – up to 60 meters from the viewing area;
- Middle Ground – from 60 meters to 1 kilometer from the viewing area; and
- Background – beyond 1 kilometer from the viewing area.

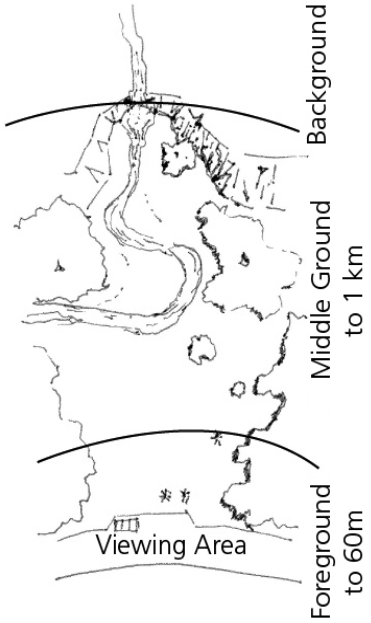

Figure II-3. The Foreground, Middle Ground, and Background of a Vista (NPS 2009)

Vista Selection

The planning team inventoried 181 scenic vista points (outside of wilderness) for consideration under the alternatives. All 181 sites inventoried would be considered for treatment in the No Action alternative (Alternative 1). In Alternative 2, low-value sites and sites that do not need clearing would be removed from consideration, leaving about 104 sites for initial treatment and 23 additional sites for maintenance. Alternative 3 would remove low-value sites and some sites in sensitive areas from consideration, leaving 93 sites for initial treatment and an additional 21 vistas for maintenance. Alternative 4 would consider all 181 sites for treatment. Alternative 5 would consider about 167 sites for initial treatment after some sites in sensitive areas were removed. The sites were selected from the following locations:

- Yosemite Valley - This site has established contemporary and historic vista points, roadside turnouts, day use and recreational areas, parking lots, bridges, beaches, and frontcountry trail vista points where the 11 Iconic Features and nine Scenic Resources identified in the *General Management Plan for Yosemite* (NPS 1980b) are visible.
- Wawona District - This site has roadside turnouts, previously existing roadside vista points, and day use areas including vista points at Wawona Point, the

Figure II-4. The area of clearing to restore a vista depends on the defined width of the viewing area and the clearing width needed to clearly see the focus of a vista. (NPS 2009)

Mariposa Grove, the Wawona Road, and the Glacier Point Road, including Washburn Point and Glacier Point.

- Mather District - This site has roadside turnouts, previously existing roadside vista points, and day use areas including vista points along the Big Oak Flat Road, near the El Portal Road intersection with the Big Oak Flat Road, Hodgdon Meadow, and Hetch Hetchy. Vista points were inventoried along the Tioga Road from Crane Flat to the Tioga Pass Entrance Station.

Actions Common to All Action Alternatives

Programmatic Approach

All Action Alternatives in this plan would support a scenic vista management program, rather than an individual project based approach. NPS staff could add additional vista points for consideration, subject to assessment criteria in the selected alternative. The overall number of vista points managed would not change, but new vista points could be treated if they are determined to be a higher priority than existing managed points.

Use of Fire as a Vista Management Tool

The purpose of the approved *Yosemite Fire Management Plan* (NPS 2004b) is to achieve ecosystem goals and reduce fire-associated risks. While vista management is not a primary goal of prescribed fire activities in Yosemite, the loss of scenic vistas in Yosemite is largely a byproduct of fire exclusion. As fire management activities may clear obstructed vistas, it would be preferable to allow those activities to clear vistas when possible. Mechanical vista clearing would not take place at sites if fire management activities are planned in the near future.

The *Yosemite Fire Management Plan* specifies target conditions for a suite of vegetation types. These specifications describe target densities, gap distribution, and other vegetation attributes for many vegetation types in the park. All Action Alternatives would adhere to the target conditions specified in the *Yosemite Fire Management Plan* as maximum limits for clearing, if available.

Prescribed fires are often delayed because site conditions do not meet the proper conditions for ignition. The following conditions would apply if prescribed fires were planned but delayed:

High-Value Sites: Vista management actions would not be deferred for planned prescribed fires.
Medium-Value Sites: Vista management actions could be delayed for up to one year if prescribed fires were planned.
Low-Value Sites: Vista management actions could be delayed for up to two years if prescribed fires were planned.

Employee and Visitor Safety

Vista clearing could involve the removal of large trees. The safety of employees and visitors would be the highest priority during vista clearing operations. Tree-felling operations would occur under the direction of the park forester, subject to strict supervisory control. During felling operations, park visitors and nonessential staff members would be restricted to a safe distance from work sites. The park forester would ensure that sufficient staff would be present to maintain a safe perimeter. The chain saw operator and staff, or contractors directly associated with felling trees, would be the only people allowed within a tree-felling worksite.

Tree fellers would be trained through the S-212 Wildfire Powersaw Operator series or equivalent, and would be restricted to operations allowed by their certifications. Staff members would be provided with appropriate training and safety equipment (including Kevlar chaps, hard hats, eye and hearing protection, and reflective clothing). Saw crews would be equipped with two-way radios and first-aid kits appropriate for dealing with major traumatic injuries. Crews would be trained in procedures for treating injured staff and transporting them to a higher level of medical care.

Fuel for chain saws and other equipment would be transported in Occupational Safety and Health Administration-approved containers. Crews would refuel equipment at their vehicles, if possible. Vehicles would contain equipment for the prevention and cleanup of spills.

Vista Clearing

All vista clearing actions would be intended to leave a vista that does not appear out of place with the surrounding natural environment (Figure II-5). Trees and shrubs would be cleared to the target densities and vegetation community composition specified under each alternative, retaining trees and shrubs as specified in annual work plans. The maximum size for viewing areas and the maximum limits of feathering (selected clearing to blend the site with the natural environment) are specified below (Table II-2). When possible, work crews would trim back (rather than remove) shrubs or trees to expose views.

Vista clearing actions would adhere to the mitigation measures developed to protect natural and cultural resources (see the end of this chapter). Work crews would protect native herbaceous (nonwoody) vegetation to the extent practicable, removing only trees and shrubs that obstruct vistas. Interpretive messages associated with vistas would remain unaffected by clearing actions.

Stump Removal

Visible limb cuts and cut tree stumps at vistas detract from the experience and leave a site that is out of place with the surroundings. Stumps would be ground down, or flush cut, and buried with debris to hide the obvious cut appearance. Larger stumps may have habitat value and some may be retained as long as the stump does not appear to be cut and in keeping with the surrounding area. Thoroughly removing stumps will require more time and care should be taken to cut below the level of duff, which can be several inches in some areas. If duff layers were to burn off later, cut stumps would be exposed.

Figure II-5. This sketch of Washburn Point demonstrates how retention of trees within a broad vista can enhance a view. The Action Alternatives establish maximum clearing limits, and annual work plans allow for site-specific treatments at each site to determine what trees remain. (NPS 2009)

Maximum Size of Viewing Area

The viewing area is the area from which the visitors enjoy the view (Figure II-4). In many cases, this corresponds to designed and constructed viewing platforms such as boardwalks or other areas delineated by fencing, rockwork, or paving. The size of the viewing platform does not always match the size of the current viewing area. For example, a constructed viewing platform may be 100 meters wide, but the vista opening through the vegetation may be only 10 meters wide. In this case, the viewing area would be 10 meters. While the viewing area width defines vista clearing boundaries directly in front of the viewing area, in some cases the clearing width can expand away from the viewing area to encompass a wider object. The maximum size for viewing areas is as follows (Table II-2):

Table II-2. Viewing area and feathering limits

Vista Value	Static Vistas – Maximum Width		Dynamic Vistas – Maximum Width	
	Viewing Area	Feathering (to each side)[1]	Viewing Area	Feathering (to each side)[1]
High	30 meters	30 meters	150 meters	60 meters
Medium	20 meters	20 meters	75 meters	30 meters
Low	10 meters	10 meters	Not applicable	Not applicable

[1] Vistas across a broad, open expanse such as a meadow may be feathered up to 60 meters.

High-Value Sites: Discrete viewing areas could be relatively broad to accommodate a large group or number of groups. Static vistas could be maintained up to 30 meters wide, or the width of the existing constructed infrastructure. Dynamic vistas could be up to 150 meters wide.

Medium-Value Sites: Discrete viewing areas would be smaller than those of high-value sites, but large enough to handle small groups. Static vistas could be maintained up to 20 meters wide, and dynamic vistas to 75 meters wide.

Low-Value Sites: The size of viewing areas would not increase beyond existing conditions. Static vistas could be maintained up to 10 meters wide, and low-value dynamic vistas would not be maintained.

Maximum Size of Feathering

Feathering is a technique used to manage the visual transition from cleared areas to the surrounding natural vegetation. The goal of feathering is to retain a gradual transition, removing unnatural straight lines in the landscape (Figure II-6). A feathered edge is meant to mimic a natural clearing edge and should be random both vertically (Figure II-7) and horizontally (Figure II-8) (Dramsted 1996). Feathering often requires the removal of more trees than would be necessary simply to view the object of a vista.

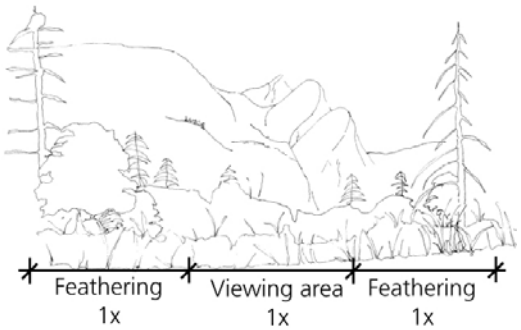

Figure II-6. The maximum width allowed for viewing area and feathering is defined by scenic value. For example, if a 10 m area is allowed for the viewing area, then 10 m for feathering is allowed on each side for a total of 30 m. (NPS 2009)

The feathering width for static views would be limited to no more than the width of the viewing area on each side of the view. For example, if the viewing area is 10 meters across, feathering would extend no more than 10 meters on each side of the cleared area. For dynamic

views, feathering could be applied to up to 60 meters on each side of clearing for the viewing area. In the case of broad views such as across meadows, the maximum feathering width allowed would be 60 meters (see Table II-2). The widths specified for clearing viewing areas are maximums and do not direct crews to clear from the middle of the view; the intent is to blend the vista into the surrounding landscape.

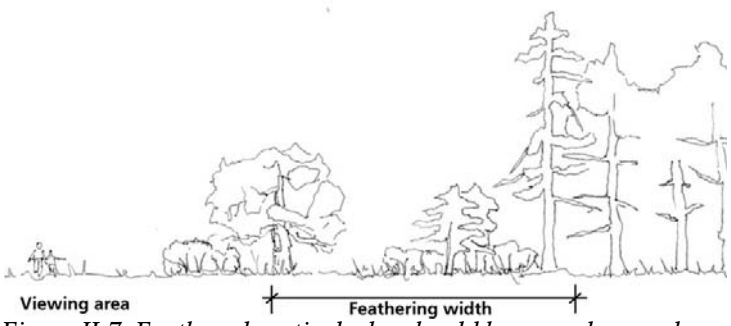

Figure II-7. Feathered vertical edge should be a random and gradual transition, and contain a mix of sizes and species. (NPS 2010)

Retention of Older Trees

No old growth trees would be removed under this plan. This plan adheres to the definition of old growth forests as described by the U.S. Forest Service, Region 5 Pacific Southwest (USFS 1992). In addition, trees would not be removed if they originated before the year in which the vista point was established. Trees that were a significant element of a historic vista would not be removed for vista management. Removing older and large trees may occur under other park programs for other reasons such as hazardous tree conditions.

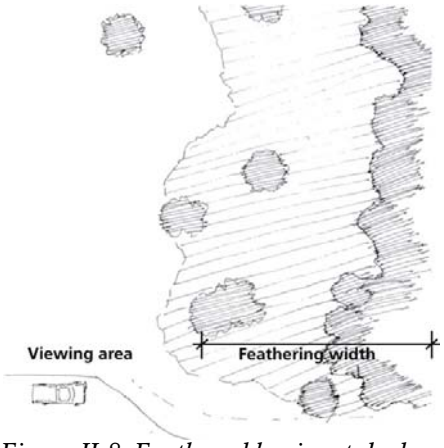

Figure II-8. Feathered horizontal edge should be random, and contain a mix of sizes and species. (NPS 2010)

The Park Forester and Resources management staff would evaluate the age of trees on a site-by-site basis (Appendix J-Tree Age Estimation). In general, trees that originated before 1880 (roughly the time when tourism began to reach larger numbers in Yosemite) would remain. When possible, photographs or other documents would be used to verify the age of trees. If a large tree (greater than 80 cm/30 inches in diameter) were obstructing a vista in a critical manner, and if the tree were younger than the establishment date of the vista, the Park Botanist and Wildlife Biologist would be consulted prior to removal of the tree.

If the establishment date of the vista is unknown, the establishment date of the associated road or trail would be adopted. For example, portions of the current Tioga Road follow a 1920s-era road (Old Tioga Road), and the middle section of road was not built until the late 1950s and early 1960s (Quin 1991). These historic construction dates would be adopted to determine whether trees would remain at a vista point. Additional dates associated with road construction are listed in Table III-10.

Mechanized Equipment Use

Work teams and managers would strive to effect the least environmental impact when clearing vistas using mechanized equipment. Worker safety and the least environmental impact would always be the prime objectives and would take priority over speed. Work crews would choose equipment based on the conditions of the site being treated, such as the potential for soil erosion and fragile soils. Equipment would be inspected before clearing activities to ensure that machinery is clean and free of weed seed and propagules. Removal equipment would vary from heavy equipment (yarders, skidder, feller-bunchers, masticators, excavators, front-end loaders, or additional equipment), to hand-held motorized equipment (chain saws, brush cutters) and very small equipment such as hand saws or loppers. It is worth noting, however, that heavy equipment can be the least invasive method. For instance, a 26 ton

excavator with a 30 foot arm can pick up and remove logs more quickly and with fewer disturbances than a 10 ton skid steer, and tracked equipment causes less soil compaction than wheeled equipment. The use of helicopters to remove timber under this plan would be highly unlikely.

Work crews would avoid soil compaction when operating trucks or heavy equipment in wet or compactable soils by distributing machinery weight with military landing mats, snow, heavy plywood, or alternatives. Operators would move tracked equipment straight in and out of work sites and avoid turning while off pavement. After the area was cleared, stumps would be removed, ground down, or flush cut. No actions in wilderness will occur under this plan, as previously stated, therefore no equipment would be used in wilderness.

Work crews would follow best management practices to avoid spills and would carry containment materials at all times in case a spill did occur. Areas would be designated for equipment and fuel staging in work plans. Temporary fuel-storage and staging areas would be flagged, signed, and monitored. Work crews would use safe and environmentally friendly fuels, lubricants, hydraulic fluid, and other fluids.

Biomass Disposal

Vista management actions could generate large amounts of logs and slash. Slash and logs would be disposed of in one of the following ways:

Cultural use: Logs from trees such as sugar pine and California black oak, may be used for cultural purposes in Yosemite National Park. Wood from these trees may be used, for example, to create historically appropriate materials for park restoration projects or for traditional use by American Indian tribal groups.

Lop and scatter: Vegetation would be dispersed onsite and cut to maximize soil contact. The depth of material would not exceed 24 inches. Saw scars may be visible until the area is burned or until the materials decompose. Large slash would not be left in meadows or subalpine areas with slow decay rates and low frequency of wildland fire.

Chip and use as onsite mulch: Vegetation would be chipped at landings or throughout the treated site. Chips would be distributed through the site as mulch. Chips would add additional concerns regarding the effects of smoke and fire if the area were considered for prescribed burning in the future.

Chip and haul: Chips could be generated into a vehicle and trucked for use as fiber or fuel, hauled for use elsewhere in the park, donated for use outside the park, sold, or given away at cost.

Pile and burn on site: This would be the preferred method of slash disposal in areas adapted to frequent fire. Slash would be piled and allowed to cure, and the site would be ignited when fuel and weather conditions allowed. This method would remove surface and ladder fuels, and reduce risk for broadcast burning later.

Haul to woodlot: Slash would be loaded on trucks and hauled to park woodlots for use in the park. Operation of the woodlots and associated burn piles is tied to a variety of park operations and could be subject to change or closure.

Logs could be hauled to park woodlots and sold at cost, or made available for public use as firewood. The park would continue to sell firewood permits to the public, and permit holders would cut and split their wood, as is the current practice. Existing woodlots are located near El Capitan (just off North Side Drive west of El Capitan Meadow), Wawona (near Prescribed Fire office), Crane Flat (South Landing), Foresta, Hodgdon Woodyard (Carlon Road), May Lake

(south of Tioga Road), and Yosemite Creek Campground, as well as in El Portal (on Middle Road).

Contracted timber removal: Timber companies would harvest and remove trees from the park under contract with the park. Work would take place under direct NPS supervision, with vigilant NPS scrutiny and monitoring to ensure that adverse impacts would be minimized. NPS staff would mark the trees slated for removal before work took place. Revenue generated would be deposited in the general treasury, and revenue would not directly fund park operations, programs, or projects.

Quiet Hours/Visitor Convenience

All work that generates noise levels above 76 decibels near residential or visitor use areas would be performed between 8 a.m. and 5 p.m. Temporary road closures would generally not exceed one-half hour. Road closures would be scheduled in periods of low visitation when possible.

Revegetation

Vista sites would be revegetated if necessary after clearing treatments by seeding or planting local native plants that would not obscure vistas. Goals of revegetation treatments would be to:

- decrease negative visual impacts due to site management activities;
- blend treated areas with surrounding native vegetation;
- establish self-sustaining native vegetation that would not obscure the view;
- sustain weed-free project sites;
- provide erosion control;
- screen existing structures; and
- treat invasive nonnative plants.

Revegetation Techniques

Revegetation actions may include reestablishment of natural site contours, seeding, plant salvage and replanting, and installation of container plants grown from local, native seed.

- **Native Seed Collection and Planting -** NPS restoration crews would develop site-specific seeding and planting prescriptions. Crews would collect native plant seed from the surrounding vegetation communities at the local site. Seed would be collected from local healthy plant populations of species with a sufficient amount of individuals that grow well from hand seeding.
- **Plant Salvage -** Plants may be salvaged prior to clearing activities, stored, and replanted after treatments are completed.
- **Site Preparation -** Soils may be decompacted at disturbed sites prior to revegetation applications. NPS restoration crews would decompact soils with hand tools, a Bobcat tiller, or an excavator.

Vista Maintenance

Each site would be evaluated in terms of whether initial clearing or maintenance would be required. In both cases, maintenance would follow a regular schedule. Sites that require maintenance would be added to the Facilities Management Software System to integrate upcoming work into the overall maintenance schedule for the park, and to assist in cost calculations. The intent of maintenance would be to prevent regrowth of trees that could block the view and to encourage the growth of appropriate native ground cover species. After initial clearing, most sites would require only regular periodic

maintenance. Vistas would not be expected to require more than one initial clearing of larger vegetation. Sites would be assessed and maintained as follows:

High Value Sites: annual basis
Medium Value Sites: at least every three years
Low Value Sites: at least every five years

Maintenance activities would be subject to the same limitations as initial clearing actions. Maintenance activities would include the removal of trees smaller than 6" diameter at breast height (dbh). The removal of trees larger than 6" dbh would be evaluated during the annual work plan review process. Crews would reassess assessment scores at the time of maintenance, and updates would be noted in the Facilities Management Software System.

Annual Work Plans

A team from the Division of Resources Management and Science in Yosemite would develop annual work plans for vista clearing treatments. Annual work plans would specify the number and location of the vistas for treatment, the size and species of trees and shrubs slated for removal, and other relevant information. The work plans would specify vistas in need of initial treatment and vistas in need of less-intensive maintenance (as described above).

The team would visit each site before including it in the work plan and would coordinate with other divisions. A team of NPS subject matter experts would review the work plan. Consultation would take place with Native American tribes and groups associated with the park. The final annual work plan would be released to the public before work commenced. An example of work plans that could occur after a FONSI is signed, if all other criteria as stated in this plan are met, are included in Appendix D. Work plans would be posted on the Yosemite National Park website and in the *Yosemite National Park Electronic Newsletter*. Progress reports for previous years would also be posted on the website.

Alternative 1: No Action

The National Park Service would continue to restore scenic vistas on an individual basis at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or to determine the intensity of treatments. Park managers would address environmental and cultural compliance and funding on a case-by-case basis. "Actions Common to All Action Alternatives" and "Mitigations" as described in this plan would not apply to vista clearing activities. While fire management activities may clear obstructed vistas, encroaching vegetation would continue to obscure vistas in about 28% of the sites, partially obscure vistas in about 54% of the sites, and remain clear in about 18% of the sites.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Alternative 2 emphasizes the scenic values of vistas. Vistas would be prioritized according to their scenic value using the Visual Resource Assessment, and treated with a standardized intensity that matches their scenic value. Field crews would use a standardized prescription for initial clearing. Park staff would clear and maintain about 104 obscured or partially obscured vistas at a rate of about 30 vistas each year, or as available funding allows. About 23 additional vistas would receive maintenance treatments. Initial clearings would take place only in vistas with medium and high values (Table II-2). Low-value vistas would be maintained as described in "Actions Common to All Action Alternatives," and initial clearing would not take place.

A National Park Service team would develop annual work plans and post them on the Yosemite National Park website prior to commencing work (see "Actions Common to All Action Alternatives"). After clearing treatments, revegetation crews would revegetate sites with local native plants that would not obscure views. Park staff would maintain cleared vistas as described in "Actions Common to All Action Alternatives."

Vista Prioritization and Selection

Vistas would be prioritized for management and ranked as being of high, medium, or low value with the Visual Resource Assessment tool as described in Appendix A.

Vista Clearing Extent and Intensity

A standard prescription for clearing would be applied to vistas with low, medium, and high values as described in Table II-3.

Table II-3. Vista clearing extent and intensity under alternatives 2 and 4

Vista Value	General	Viewing Area - Maximum Size	Feathering Area - Maximum Size
High	Clearing boundaries would be broad and generous to allow unobstructed views of the entirety of the object of the vista. All vegetation in the foreground and mid-ground could be removed (as consistent with mitigation).	Static vistas - 30 meters wide Dynamic vistas - 150 meters long	Static vistas - 30 meters on each side Dynamic vistas - 60 meters on each side
Medium	Clearing would be less intensive than in high-value vistas. Clearing could occur in the foreground and mid-ground. Snags would not be removed unless that was critical to establishment of the vista.	Static vistas - 20 meters wide Dynamic vistas - 75 meters long	Static vistas - 20 meters on each side Dynamic vistas - 30 meters on each side
Low	Retain the diversity and complexity of the surrounding native vegetation communities. Herbaceous or woody plants with significant habitat value or local ecological importance, dead or alive, would not be removed. Vistas would be maintained if activities would occur without detriment to the integrity of the biotic habitat. Vistas could remain limited, filtered, or partially screened. Actions would be limited to the foreground.	Static vistas - 10 meters wide Dynamic vistas – Not maintained	Static vistas - 10 meters on each side Dynamic vistas – Not maintained
Meadows	Trees (mainly saplings) that meet mitigation specifications would be removed from nonwilderness meadows to within the existing outline of the meadow as defined in the 1997 Parkwide Vegetation Map.		

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Alternative 3 emphasizes the scenic value of vista sites to prioritize sites for management, and the ecological condition of vista sites to determine the extent and the intensity of clearing. Vistas would be prioritized according to their scenic value using the Visual Resource Assessment, as in Alternative 2. Managers would prescribe the intensity of vegetation clearing at each vista based on the vegetation communities present at each vista site. Park staff would clear and maintain about 93 obscured or partially obscured sites, at a rate of about 30 initial clearings per year, or as available funding allows. In addition, about 21 sites (18%) that may not need initial clearing could be maintained. Field crews would

use a standardized clearing prescription to give initial clearing treatments to vistas with medium and high values (Table II-2). Low-value vistas could not be initially cleared; they would only be maintained as they currently exist.

A National Park Service team would develop annual work plans and post them on the Yosemite National Park website prior to commencing work (see "Actions Common to All Action Alternatives"). After clearing each vista, crews would revegetate the site with local native plants that would not grow to obscure views. Park staff would maintain cleared vistas as described in "Actions Common to All Action Alternatives."

Vista Prioritization and Selection

Vistas would be prioritized for management and ranked as having high, medium, or low value with the Visual Resource Assessment tool as described in Appendix A.

Vista Clearing Extent and Intensity

Alternative 3 prescribes the intensity of vegetation clearing at each vista based on the vegetation communities present at each vista site. The Yosemite landscape encompasses a remarkable range of vegetation communities, as it rises from 2,000 feet to over 13,000 feet. The diverse vegetation in the park includes foothill chaparral, giant sequoia, California black oak, and lodgepole pine. Some vistas encompass more than one vegetation community. The vegetation types described in the *Yosemite National Park Fire Management Plan* (NPS 2004b) would form a basis for specific clearing prescriptions (Table II-4), supplemented by site-specific ecological information (Appendix B).

Subalpine Forest. These high-elevation communities are slow growing and may be most sensitive to adverse effects associated with vista clearing. Fire exclusion has had a minimal effect on forest health, and vista clearing activities would be more limited than in other forest types more strongly influenced by fire exclusion. Clearing activities would be conservative. Large numbers of small diameter trees and saplings could be removed for vista management associated with meadows.

Upper and Lower Montane Forest. This vegetation type is more strongly affected by fire exclusion than are communities that grow at higher elevations. The removal of larger volumes of trees could take place, as consistent with *Fire Management Plan* (NPS 2004b) target prescriptions.

Montane Meadows. Conifers would be removed to maintain nonwilderness montane meadows within the existing outline of the meadow as defined in the 1997 *Parkwide Vegetation* map, with an additional 60 meters for feathering. Clearing would target conditions similar to what would exist in the presence of frequent low intensity wildland fires.

Subalpine Meadows. Conifers would be removed to maintain nonwilderness subalpine meadows within the existing outline of the meadow as defined in the 1997 *Parkwide Vegetation* map.

Table II-4. Vista management specifications based on ecological conditions

Vista Management Intensity in Ecological Zones		
High-Value Vistas	**Medium-Value Vistas**	**Low-Value Vistas**
Subalpine Forest - Lodgepole Pine Forest, Whitebark Pine/Mountain Hemlock		
Obstructing trees in the foreground or middle ground may be removed, except: • Whitebark pine unless critical to the vista. • Snags unless critical to the vista.	Obstructing trees in the foreground may be removed, except: • Whitebark pine. • Any snags.	No clearing or maintenance actions would occur.
Subalpine Meadow		
• Conifers under 30" dbh (including saplings) may be removed to maintain current subalpine meadow extent. • No feathering would take place outside of the meadow boundary as defined in the 1997 Parkwide Vegetation Map. • Heavy equipment would not be utilized in sensitive areas.		
Upper Montane Forest - Montane Chaparral, Western White Pine/Jeffrey Pine forest, Red Fir Forest, Sierra Juniper		
Obstructing trees in the foreground or middle ground may be removed, except: • Large diameter sugar pine (over 30" dbh) unless critical to the vista. • Large diameter snags (over 24" dbh) unless critical to the vista.	Obstructing trees in the foreground or middle ground may be removed, except: • Large diameter sugar pines (over 30" dbh); but other sugar pines (under 30" dbh) may be removed only if locally common. • Trees underrepresented in FMP Target Conditions (Appendix I) unless critical to the vista. • Large diameter snags (over 24" dbh) unless critical to the vista.	No initial clearing actions. Maintenance actions only in foreground; no actions in the middle ground. The following also applies: • No red fir or Sierra juniper removed. • No sugar pines removed, unless locally common. • No snags removed.
Lower Montane Forest - California Black Oak, Canyon Live Oak, Blue Oak		
Obstructing trees in the foreground or middle ground may be removed, except: • California black oak unless critical to the vista.	Obstructing tree in the foreground or middle ground may be removed, except: • California black oak. • Sugar pine, unless locally common.	No initial clearing actions. Maintenance actions only in foreground. No actions in the middle ground. The following also applies: • No sugar pine removed. • No broad-leafed trees removed.
Montane Meadow		
• Conifers under 30" dbh (including saplings) would be removed to maintain nonwilderness montane meadows within the existing outline of the meadow as defined in the 1997 Parkwide Vegetation Map. • Feathering could take place up to 60 meters outside of meadow boundary. • Heavy equipment would not be utilized in sensitive areas.		
Foothill Woodland: Foothill Pine/Live Oak/ Chaparral, Foothill Chaparral		
Obstructing trees in the foreground may be removed, except: • California black oak. • Elderberry above 3,000 feet.	Only shrubs obstructing a vista in only the foreground may be removed.	No vista clearing activity would take place

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Alternative 4 emphasizes flexibility in prioritizing vistas for management. A team of park professionals would prioritize vistas for management on an annual basis. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas treatments. Once vistas were prioritized for treatment, park staff would apply a standardized clearing prescription as in Alternative 2 (Table II-2). About 181 vistas would be considered for initial treatment, continuing at a rate of about 30 each year, or as available funding allows.

This alternative differs from the No Action alternative in that park staff would develop comprehensive annual work plans to prioritize and treat vistas, and clearing prescriptions would be subject to the limitations and boundaries described in the "Actions Common to All Action Alternatives" section, including maximum sizes for vistas and viewing areas. A National Park Service team would develop annual work plans and post them on the park's website prior to commencing work (see "Actions Common to All Action Alternatives"). After vista clearing, revegetation crews would revegetate sites with local native plants that would not grow to obscure views (see "Actions Common to All Action Alternatives").

Vista Prioritization and Selection

A professional NPS team would select vistas for management on an annual basis.

Extent and Intensity of Vista Clearing

A standard prescription for clearing would be applied to vistas with low, medium, and high values as described in Table II-3.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

This alternative emphasizes flexibility in prioritizing vistas for management, as well as ecological conditions for determining the extent and intensity of vista clearing. A team of park professionals would prioritize vistas for management on an annual basis in the same manner as in Alternative 4. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for management. The ecological conditions at each vista site would determine the prescription for vegetation clearing in the same manner as in Alternative 3 (see Table II-4). About 167 vistas would be considered for initial treatment, continuing at a rate of about 30 each year, or as available funding allows. After clearing treatments, revegetation crews would revegetate sites with local native plants that would not grow to obscure views (see "Actions Common to All Action Alternatives").

Vista Prioritization and Selection

A professional NPS team would select vistas on an annual basis.

Vista Clearing Extent and Intensity

Alternative 5 prescribes the intensity of vegetation clearing at each vista based on the vegetation communities present onsite (Appendix B), as in Alternative 3. The Yosemite landscape encompasses a remarkable range of vegetation communities, as it rises from 2,000 feet to over 13,000 feet. Diverse

vegetation in the park includes foothill chaparral, giant sequoia, California black oak, and lodgepole pine. Some vistas encompass more than one vegetation community. The vegetation types described in the *Yosemite National Park Fire Management Plan* (NPS 2004b) would form a basis for specific clearing prescriptions (Table II-4), supplemented by site-specific ecological information (Appendix B).

Comparison of Alternative Management Actions

To illustrate the differences among alternatives, Table II-5 examines a potential vista site for initial clearing, and the number of trees that would likely be removed to reestablish a clear view under each alternative. This data is based upon tree counts conducted as part of the initial 2009 *Vista Survey* (NPS 2010b). This vista is a popular spot at the western end of Tioga Road. Although the view lacks the expansiveness of vistas farther to the east, there is a paved turnout next to the nearby bridge, as well as an interpretive sign. For the purposes of this example, alternatives that do not use the Visual Resource Assessment to prioritize vistas, as well as factors such as geographic distribution and infrastructure, were included to rate the value of the site as having high scenic value.

Table II-5. Comparison of maximum tree removal at site 136 among the Alternatives

Name:	South Fork of the Tuolumne, Road Marker T5
Vegetation Type:	Upper Montane Forest (Red Fir Forest)
Description:	Tioga Road turnout at bridge over the South Fork of the Tuolumne River
Design Year:	1939
Elevation:	6819 feet

				Tree Removal				
		Scenic Value	**Viewing Area Width**	**Jeffery Pine[1]**	**Sugar Pine[1]**	**Douglas Fir[1]**	**snag[1]**	**TOTAL**
Alternative 1	No Action	NA	NA	unknown				**unknown**
Alternative 2	Use Scenic Value to Determine Intensity of Vista Clearing	VRA score: medium (8.75)	20m	5 >20" dbh	1 <20" dbh 5 >30" dbh	1 <20" dbh 1 >30"dbh	0	**13**
Alternative 3 (Preferred)	Use Ecological Conditions to Determine Intensity of Vista Clearing [2]	VRA score: medium (8.75)	20m	5 >20" dbh	1 <20" dbh	1 <20" dbh 1 >30"dbh	0	**8**
Alternative 4	Use Professional Team Assessment to Prioritize Vistas for Treatment	could rate as high	30m if rated high value	7 >20" dbh	2 <20" dbh	2 <20" dbh 1 >30"dbh	1 >30"dbh	**20**
Alternative 5	Use Professional Team Assessment and Ecological Conditions to Determine Intensity of Vista Clearing [2]	could rate as high	30m if rated high value	7 >20" dbh	2 <20" dbh 7 >30" dbh	2 <20" dbh 1 >30"dbh	1 >30"dbh	**14**

[1] Trees in field were counted based on 20m viewing area with feathering; a 30m viewing area assumes approximately 50% more potential trees.

[2] Fire Management Plan Target Conditions for red fir forest are 70-100% fir and 0-30% pine. Target conditions for this community are met. The Vegetation Management Plan recommends maintaining an assortment of trees of mixed ages.

Actions or Alternatives Considered but Dismissed

Use Herbicides to Clear Vistas

Herbicide use was considered to remove vegetation for vista management. As a vista clearing agent, herbicides would be most effective on species that resprout from stumps after the vegetation has been cut down. In Yosemite, conifers are the most common species that block viewing areas. Conifers do not resprout after removal, and the few species of broadleaved trees that may block vista points could be kept open with regular maintenance. For this reason, herbicide use was not considered an effective means to clear obstructed vistas. Herbicides may be used as allowed under other park plans, but not for the purpose of clearing trees for vista management.

Clear Vistas in Wilderness

Vista clearing is not considered an appropriate activity in Yosemite's Wilderness areas because intentional management of vistas is in conflict with the Wilderness Act.

Rehabilitate or Reconstruct Infrastructure at Vista Points

Cracked pavement, broken railings, and outdated parking space layouts are found at many vistas. Rehabilitation or reconstruction of such facilities could require the development of different design alternatives for each site – currently 181 sites have been assessed in nonwilderness. Such changes in infrastructure would be subject to additional site-specific planning and associated environmental compliance. Infrastructure repair, rehabilitation, and reconstruction are beyond the scope of the SVMP, but could be addressed though alternate planning processes or (in some cases) be covered as routine maintenance.

Improve Line of Sight Communication

Vista management can be associated with the operation of communication systems. Microwave and some radio transmission systems require point-to-point line of site to transmit signals. Vegetation may block that line of site and interfere with communication (both voice and data). In such cases, vegetation control could be required to restore function. This clearing serves a purpose different from that of scenic vista management and is not analyzed in this document. A separate FONSI of this issue was determined and affirmed on May 11, 2010.

Mitigation Measures

Wildlife Protection

Yosemite contains over 60 invertebrate, amphibian, reptile, bird, and mammal species considered at risk and afforded special status. Under the work plan review process, known habitats for special-status species within any proposed vista point clearing area would be evaluated by a qualified biologist, and suitable mitigation measures would be applied as needed. If inventories were required, any site modification or clearing would be delayed until the inventory and suitable mitigation were completed. Park managers would minimize impacts on special-status species by scheduling vista restoration activities around sensitive periods of time, e.g., nesting season for birds and maternity and hibernation periods for bats, providing direct protection of certain areas such as nesting trees, or simply not changing parts of the vista.

Bird and Bat Protection Measures

Annual work plans would schedule activities to minimize potential adverse effects on bird and bat species. In general, September through October would be the best estimated time for vista clearing to take place, subject to site-specific conditions (see Table II-6).

Table II-6. Yosemite National Park standard bird and bat protection measures

<table>
<tr><th>JAN</th><th>FEB</th><th>MARCH</th><th>APR</th><th>MAY</th><th>JUNE</th><th>JULY</th><th>AUG</th><th>SEPT</th><th>OCT</th><th>NOV</th><th>DEC</th></tr>
<tr><td colspan="12">Bird Protection</td></tr>
<tr><td colspan="2">No bird survey required prior to tree removal</td><td colspan="6">Limit clearing activities in bird nesting habitat.
Bird survey required no more than 1 week prior to clearing.</td><td colspan="4">No bird survey required prior to tree removal.</td></tr>
<tr><td colspan="12">Bat Protection – See two options below</td></tr>
<tr><td colspan="12">• PREFERRED OPTION – CONDUCT ACTIVITIES DURING PERIODS OF THE YEAR WHEN BATS ARE NOT LIKELY TO BE AFFECTED.[1] Clearing activities are not likely to affect bats during the periods listed below. Activities may take place without surveys or special provisions.</td></tr>
<tr><td colspan="4"></td><td colspan="2">Bats unlikely to be affected (4/15-5/15)</td><td colspan="3"></td><td colspan="2">Bats unlikely to be affected (8/15 – 10/31)</td><td colspan="2"></td></tr>
<tr><td colspan="12">• OPTION TWO - If it is not possible to conduct activities as above, survey at any time to identify trees that are likely to support bats during maternity periods or hibernation. If likely trees are found, conduct work in timeframes displayed above or delay tree/snag removal during maternity and hibernation periods or until a qualified biologist determines action would not adversely affect bat survival or survival of young.</td></tr>
<tr><td colspan="3">Hibernation (10/31 – 4/15)</td><td></td><td></td><td colspan="3">Maternity period (5/15 – 8/15)</td><td></td><td></td><td></td><td>Hibernation (10/31-4/15)</td></tr>
</table>

[1]Adjust dates as necessary for unusual weather. For example, a late spring may delay emergence from hibernation, or an early winter may initiate an early onset of hibernation. Contact an NPS wildlife biologist for additional information.

Bird Protection Mitigation Measures: If it were the case that appropriate vista management timeframes could not be met, and vista management activities were deemed necessary during bird and bat nesting seasons:

1. If nesting special-status birds were observed during the vista management implementation process, a wildlife biologist would be required to evaluate whether management activities would impact an active nest or disrupt reproductive behavior.
    - If yes – Vista management activities would be unacceptable within 500 feet of the nest until a qualified biologist determined that the subject birds were no longer nesting or until all juvenile birds were no longer using the nest as their primary day and night roost.
2. If nesting birds were observed that were not special-status species, a park biologist would be notified to determine whether management activities would affect an active nest or disrupt reproductive behavior.
    - If yes – Disruptive activities would be avoided if possible.

Wildlife Habitat Protection

Efforts would be made to preserve, where possible, natural processes and natural features with obvious high value to wildlife, such as snags (particularly those with evidence of wildlife use), very large diameter trees, oak trees, large diameter logs, and decaying wood across the landscape. Removal of these key features could have long-term effects on habitat quality.

Key habitat features for Pacific fisher would be retained where possible, and large snag retention and recruitment would also be maintained where possible.

Key Habitat Features for Pacific Fisher: Key fisher habitats are structurally complex late-successional forests. In key fisher habitat, retain:

- overhead cover (Buskirk and Powell 1994);
- the presence of large diameter snags (Freel 1991, Buskirk and Powell 1994) distributed across the landscape;
- large diameter (at least 15 inches dbh by 15 feet long) down logs (Freel 1991, Buskirk and Powell 1994) distributed across the landscape;
- large diameter (greater than 24 inches dbh) live conifer and oak trees with decadence such as broken tops or cavities (Freel 1991);
- complex structures near the ground (e.g., down logs, large down branches, root masses, live branches) (Buskirk and Powell 1994); and
- multi-layered vegetation (vertical within-stand diversity) (Freel 1991).

To protect Pacific fishers in key fisher habitat,

- retain and recruit large trees and trees that achieve the largest sizes (conifer and hardwood);
- retain and recruit large diameter snags;
- maintain dense canopy in the vicinity of large trees; and
- retain and recruit large woody debris (down logs, large down branches, root masses, live branches).

Large Snag Retention & Recruitment: Snags are an essential habitat element for a variety of wildlife species, including many special-status species identified in Yosemite National Park. In order to retain and recruit large snags:

- wildlife biologists would inventory snags in and adjacent to vista management areas and identify all wildlife use;
- snag removal would be conducted only under consultation with the park wildlife biologist and park forester;
- wildlife use and protection of wildlife habitat snags would continue to be monitored as vista management activities proceed. If any nesting wildlife were discovered during vista management, nests would not be further disturbed, and the wildlife biologist would be immediately notified for advisement; and
- basal hollows, created by repeated fires, deep bark furrows, and cavities and crevices of tree crowns would not be disturbed or trampled. (Pierson, Rainey, and Chow 2006)

Table II-7. Key habitat features for fisher resting and denning sites (USDA Forest Service 2001)

Region	Mean Den Tree dbh		Mean Rest Site Tree dbh		Mean Rest Site Basal Area	Mean Den Canopy Closure	Mean Rest Site Canopy Closure
	Conifer	Oak	Conifer	Oak	Square ft/acre	Percent	Percent
Southern Sierra [a]	124 cm[a] 49 in[a]	69 cm[b] 27 in[b]	112 cm[b] 44 in[b]	66 cm[b] 26 in[b]	273 [c]	94 [b]	93 [b]

A. [a] For habitat composition purposes, the Southern Sierra Subregion is considered to consist of the Sequoia, Sierra, and Stanislaus national forests.

B. [b] Data are from the Southern Sierra Study (Zielinski pers. obs.), which falls 80% on the Sequoia National Forest, and 20% distributed between the Mountain Home State Demonstration Forest, the Tule River Indian Reservation, and several private inholdings. The elevation range is from approximately 2,500 to 9,500 feet.

C. [c] Data are derived from Truex, Zielinski, Golightly, Barrett, and Wisely (1998). Since no studies of fisher have been completed (due to apparent absence of the species from these subregions) in the Northern or Central Subregions, data from Dr. Rick Golightly's Eastern Klamath Study [theses of Dark (1997) and Seglund (1995)] on Weaverville RD of the Shasta-Trinity National Forest in an elevation range of 1,900 to 4,800 feet were used to best approximate habitat fisher might use if present in these subregions.

Special-Status Plants

A botanist would work with vista management staff to ensure protection of special-status plants. If needed, site surveys could be conducted prior to vista management work, and a rare-plant monitor would oversee clearing activities to ensure protection of rare plants.

Riparian Corridors

Riparian ecosystems are water-related areas that support unique vegetation and animal communities. Riparian corridors are immediately adjacent to streams, rivers, or ponds. Riparian corridors serve many important ecological functions, including maintaining water quality and thermal regulation of the stream or river channel, and providing flood management and wildlife habitat.

For the purposes of this plan, riparian function would be maintained at respective vista sites, and sensitive areas within riparian corridors would be protected. Sensitive areas include sensitive wildlife habitat areas (e.g. nesting or roosting sites), vegetation at the water's edge, undercut banks, wet areas, wetlands, and steep bank slopes.

Guidelines

Appropriate mitigation measures would be taken when removing trees to ensure that the surrounding riparian corridor associated with a vista would remain in proper ecological functioning condition, or that existent conditions would not be diminished.

To maintain the ecological integrity of riparian corridors associated with a vista site, and to protect particularly sensitive areas within riparian corridors, the mitigation measures listed would be taken.

- *White alder trees (Alnus rhombifolia) would not be removed unless critical to restoring a vista of high or medium value*. Under natural conditions, this tree species often characterizes riparian corridors along the Merced River.
- *Action would be limited to no removal of species in the willow family (Salix), including black cottonwood trees (Populus balsamifera)*. Retention of such species provides suitable habitat for birds that nest in riparian areas.

- *Action would be limited to no removal of trees located immediately adjacent to the water's edge that hang over the stream or river*. Retention of such trees shades the stream channel, providing for in-stream temperature regulation.
- *Action would be limited to no removal of in-stream, downed large wood*. Retention of in-stream large, downed wood is important in providing channel structure and suitable habitat for fish and other aquatic life. When removing trees, resource managers would also consider the placement of such trees as LWD, if trees were large enough to resist streamflow forces (tree length usually 0.5x the width of the channel).
- *Action would be limited to no heavy equipment use in sensitive areas.* Such areas may include semipermanently to permanently wet areas along the channel, or adjacent wetlands, exhibiting hydric plant species. Such areas would also be avoided by crews where possible.
- *Action would be limited to no heavy equipment use in areas vulnerable to soil compaction and bank erosion*. This would include areas adjacent to overhanging banks at the water's edge, and banks with steep slopes. Such areas would also be avoided by crews where possible (see *Soil Stability Guidelines*).
- *Vista clearing would be done in accordance with the Wild & Scenic River Act of 1968*. This pertains to vista clearing in riparian corridors associated with the Merced or the Tuolumne rivers (see Chapter 4 for more details). Actions for vista management will be done in accordance with these plans.

All projects would comply with state water quality standards and federal laws pertaining to work that has the potential to affect navigable waters of the U.S. See Chapter V, "Consultation and Coordination."

Soil

Soils on steep slopes are generally shallow and tend to be fragile. Topography influences soil in many ways. As slope increases, runoff and subsequent soil erosion increase. Forest vegetation, especially tree roots, helps stabilize slopes by reinforcing soil shear strength. For this reason, the rooting strength provided by trees is something that must be considered when clearing scenic vistas on steep slopes, or any slope with erosion potential. If a hill's slope does not possess enough soil shear strength, then the likelihood of soil stability failures, such as soil creep or shallow-seated landslides, is much greater. In order to avoid such failures, the following guidelines, or mitigation measures, would be taken:

Guidelines

Crews implementing vista clearing work would employ best management practices to ensure soil stability intactness and would employ the following practices from the *Fire Management Plan* (FMP) (NPS 2004b) under "Mitigation Measures, Natural Resources," pp. 2-42:

> *Impacts to soils would be minimized by utilizing the best available technology and rehabilitation of disturbed soils. Areas with a high probability of erosion would be stabilized using best available methods, as determined by park resource management staff. Disturbed soils would be rehabilitated by restoring slope contour, and using other best practices.*

For example:

- There would be no removal of tree stumps when removing trees on slopes with erosion potential or along riparian corridors. All stumps would also be flush cut and camouflaged in order to provide a more natural-looking appearance post vista clearing.
- If soil stability intactness on slopes with erosion potential were disturbed post vista clearing work, then appropriate posttreatment restoration work would be conducted to repair the soil.

- Restoration workers could employ bank stability techniques, such as the placement of log checks or waddles.
- In riparian corridors, the planting of willow species for increased rooting strength could also be considered by resource managers. (NPS 2004b)

Air Quality

The intent would be that air quality should be minimally affected as a result of vista management regarding clearing operations. As technology and policy evolve, practices should be reviewed and updated to meet this goal.

Currently the park must use low-smoke two-cycle oil in all two-cycle equipment employed for vista management.

As equipment powered by two-cycle engines wore out or needed to be replaced, the park would examine the practicality of replacement with four-stroke engines or other power sources that have low emissions. Replacement of two-cycle engines with other types would occur only if other engine types displayed adequate power-to-weight ratios and were otherwise practical for field use.

Burning of slash piles would occur only on designated burn days. Wood would be allowed to cure prior to being burned in order to reduce smoke generation.

Cultural Resources

Cultural resources are critical to Yosemite as a record of past human use; as places to experience, learn about, and enjoy the park; and for the continuation of traditional cultural practices. Cultural resource experts in the branches of History, Architecture and Landscapes (HAL) and Anthropology and Archeology (AA) would review the annual work plan to ensure an absence of adverse effects on cultural resources and to apply appropriate mitigations. The park would not remove specific vegetation that is a critical component of a cultural landscape.

During the planning phase of vista management activities, managers would consult with locally affiliated tribes and American Indian groups regarding proposed annual work plans. These groups would have the opportunity to notify the park of any potential effects on resources and to specify appropriate mitigations to traditional cultural properties or practices.

Environmentally Preferable Alternative

The Council on Environmental Quality (CEQ) regulations implementing NEPA and NPS NEPA guidelines require that "the alternative or alternatives which were considered to be environmentally preferable" be identified (CEQ Regulations, Section 1505.2). "Environmentally preferable" is defined as "the alternative that will promote the national environmental policy as expressed in NEPA's Section 101. Ordinarily, this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources."

Section 101 of NEPA states:

> *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.

Section 101 Requirement 1. "Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations."

Conformance: Alternative 1, the No Action alternative, would restore vistas at a rate of about three vistas per decade. With 80 or more largely obstructed vistas in Yosemite, Alternative 1 would not meet *General Management Plan* (NPS 1980) goals to preserve, protect, and restore scenic resources for succeeding generations. Alternatives 2, 3, 4, and 5 would largely meet these scenic goals. Alternatives 3 and 5 would give greater consideration to trees, shrubs, and habitat components with high biologic value, such as snags and California black oak.

Section 101 Requirement 2. "Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings."

Conformance: Alternative 1, the No Action alternative, would not restore vistas at a rate that would meet *General Management Plan* (NPS 1980) goals to preserve, protect, and restore aesthetically pleasing scenic resources. Alternatives 2, 3, 4, and 5 would largely meet these aesthetic goals by restoring 80 to 93 completely obstructed vistas in three to five years. In addition, Alternatives 2, 3, 4, and 5 prescribe comprehensive safety and best management practices.

Section101 Requirement 3. "Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or undesirable and unintended consequences."

Conformance: Alternative 1, the No Action alternative, would not restore vistas at a rate that would meet *General Management Plan* (NPS 1980) goals to preserve, protect, and restore scenic resources. Alternatives 2, 3, 4, and 5 would largely meet these scenic goals by restoring 80 to 93 completely obstructed vistas in three to five years. Alternatives 3 and 5 would give greater consideration to trees, shrubs, and habitat components with high biologic value, such as snags and California black oak, protecting high-value habitats. Alternative 3 would use a standardized methodology to prioritize vistas for treatment, giving a more predictable outcome and assuring that the criteria used to prioritize vistas are consistent through time. Alternative 3 provides a consistent and transparent methodology for prioritization, limiting undesirable and unintended consequences associated with vista clearing.

Section 101 Requirement 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."

Conformance: Alternatives 2 and 3 would best support historic, cultural, and natural elements, as well as diversity and cultural heritage, by employing the Visual Resource Assessment as a standardized approach. By supplying an additional numeric value to historic and cultural sites, the use of this tool would ensure that the factors cited would be considered at all sites, currently and in the future.

Section 101 Requirement 5. "Attain a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities."

Conformance: Alternative 1, the No Action alternative, would not restore vistas at a rate that would meet *General Management Plan* (NPS 1980) goals to preserve, protect, and restore scenic

resources. Alternatives 2, 3, 4, and 5 would balance population and resource use by providing more opportunities for park visitors with a wide range of abilities to experience the scenic resources of Yosemite National Park. Alternatives 3 and 5 would give greater consideration to natural resource use in restoring scenic vistas. Alternative 3 would use a standardized methodology to prioritize vistas for treatment, giving a more predictable outcome and ensuring that the criteria used to prioritize vistas are consistent through time. Alternative 3 provides a consistent and transparent methodology for prioritization, attaining the best balance between population and resource use, and permitting a high standard of living and a wide sharing of life's amenities.

Section 101 Requirements 6. "Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources."

Conformance: Alternative 1, the No Action alternative, does not prescribe consistent measures to recycle woody material cleared from obstructed vistas. Alternatives 2, 3, 4, and 5 would prescribe actions for reuse of woody material cleared from obstructed vistas. Alternatives 3 and 5 offer greater protection of trees, shrubs, and habitat components with high biologic value, such as snags and California black oak, protecting high value habitats during vista clearing treatments.

In conclusion, upon full consideration of the elements of Section 101 of NEPA, Alternative 3, Use Ecological Conditions to Determine Intensity of Vista Clearing, represents the environmentally preferable alternative for scenic vista management in Yosemite National Park. Alternatives 3 and 5 would give greater consideration to habitat components with high biologic value, causing the least damage to the biological and physical environment. Of these two alternatives, Alternative 3 best protects, preserves, and enhances historic, cultural, and natural resources, as it provides a consistent and transparent methodology for prioritization of vistas for management, limiting undesirable and unintended consequences associated with vista clearing.

III AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Introduction

This chapter describes the existing environment that could be affected by actions proposed in the *Scenic Vista Management Plan* (SVMP). It also analyzes potential impacts that could result from implementation of the alternatives described in Chapter II. This chapter lists the resource topics used to describe the existing environment, and discusses the rationale for dismissing some of the impact topics. The topics analyzed in this environmental assessment (EA) include natural, cultural, and social resources that could be directly, indirectly, or cumulatively affected as a result of the implementation of any alternative proposed in this EA.

Federal and state laws, regulations, and policies require that federal undertakings be examined for their effects on natural, cultural, and social resources. In addition, National Park Service *Management Policies* require that impacts on park resources be considered in all planning proposals (NPS 2006). Listed below are primary laws requiring analysis of impacts on natural, cultural, and social resources and historic properties.

- National Environmental Policy Act (NEPA)
- Endangered Species Act (ESA)
- Clean Water Act (CWA)
- Clean Air Act (CAA)
- National Historic Preservation Act (NHPA)
- Native American Graves Protection and Repatriation Act (NAGPRA)
- Archeological Resource Protection Act (ARPA)
- American Indian Religious Freedom Act (AIRFA)

Impact Topics Considered in This Plan

Resource impact topics were selected based on federal laws, regulations, executive orders, National Park Service (NPS) management policies, and issues raised during internal and public scoping and comment. Impact topics selected for analysis include Wetlands, Vegetation, Special-Status Vegetation, Wildlife, Special-Status Wildlife, Soils, Hydrology and Water Quality, Air Quality, Noise, Geologic Hazards, Wilderness, Scenic Resources, Historic Structures and Cultural Landscapes, Archeological Resources and Ethnographic Resources (including Archeology, American Indian Traditional Cultural Properties, and American Indian Cultural Practices), Visitor Experience and Recreation, Transportation, and Park Operations. Table III-1, at the end of this section on page III-7, provides a summary of the Environmental Consequences of the alternatives for each impact topic.

Impact Topics Dismissed from Further Analysis

The actions considered in this plan are not expected to have a reasonably foreseeable impact on the following topics, and they were dismissed from detailed consideration:

Environmental Justice: No aspect of the Action Alternatives would result in disproportionately high and adverse human health or environmental effects on minority or low-income populations. Any restriction on travel or access to any area of the park that might result from the project would be equally applied to all visitors, regardless of race or socioeconomic standing. The Action Alternatives would not result in destruction or disruption of community cohesion and economic vitality, displacement of public and private facilities and services, increased traffic congestion, and/or exclusion or separation of minority or low-income populations from the broader community.

Prime and Unique Agricultural Lands: There are no Prime and Unique agricultural lands in or near the project area.

Socioeconomics: The alternatives presented in the plan do not include changes in infrastructure or visitor use patterns or capacity. The program would have no socioeconomic impact on the community.

100-year and 500-year Floodplains: Vista management could result in the removal of some trees from within the 100-500 year floodplains. However, no filling or excavating would occur, and stumps would not be removed; no addition or removal of pavement or other infrastructure would occur. As a result under, there would be no impact on 100- and 500-year floodplain function or values. NPS Director's Order 77-2 *Floodplain Management* also list historic properties and scenic overlooks as an exceptions not covered.

Night Sky: The NPS wishes to preserve, as much as possible, the natural lightscapes of parks, which are natural resources and values that exist in the absence of human-caused light. The alternatives presented do not include changes in infrastructure or visitor use patterns or capacity. This program would have no impact on night sky.

Land Use: Land uses within Yosemite National Park are classified as "Parklands" regardless of the individual types of land uses within the park. Implementation of the SVMP would not affect this classification, or any land uses within the park.

Energy Consumption: The implementation of the SVMP would have no impact on energy consumption within the park. The overall use of electricity, propane, gasoline, diesel, wood, or other energy sources would not be influenced by scenic vista management.

Museum Collections: Implementation of the SVMP would have no impact on museum collections.

Community Values: Implementation of the SVMP would have no impact on community values.

Methods for Analyzing Environmental Consequences

NEPA requires that environmental documents disclose the environmental impacts of the proposed federal action, reasonable alternatives to that action, and any adverse environmental effects that could not be avoided should the proposed action be implemented. This section analyzes the environmental impacts of project alternatives on affected park resources. These analyses provide the basis for comparing the effects of the alternatives. NEPA requires consideration of context, intensity, and duration of impacts, indirect impacts, cumulative impacts, and measures to mitigate impacts. In addition to determining the environmental consequences of the preferred and other alternatives, NPS *Management Policie*s (2006) and Director's Order (DO) 12, *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 1982) require analysis of potential effects to determine whether actions would impair park resources.

Impact Analysis General

The environmental consequences resulting from each impact topic were defined based on the following information regarding context, type of impact, duration of impact, intensity of impact, and the cumulative context. Unless otherwise stated in the resource section in "Environmental Consequences," analysis is based on a qualitative assessment of impacts.

Context: Setting or area within which impacts are analyzed – such as the local project area, the region, or national area of influence; for cultural resources – the area of potential effect.

Localized: Detectable only in the vicinity of the proposed action.

Regional: Detectable on a landscape scale (beyond the affected site).

National: Detectable on a national scale.

Type of Impact: A measure of whether an impact would be beneficial or harmful to a resource and whether that harm would occur immediately or at some later time.

Beneficial: Reduces or improves impact being discussed.

Adverse: Increases or results in negative impact being discussed.

Direct: Caused by, and occurring at the same time and place as, the action, including such impacts as animal and plant mortality and damage to cultural resources.

Indirect: Caused by the action, but occurring later at another place or to another resource, including changes in species composition, vegetation structure, range of wildlife, offsite erosion, or general economic conditions tied to park activities.

Duration of Impact: Duration is a measure of the period over which the effects of an impact persist. The duration of impacts evaluated in this EA may be one of the following:

Short-term: Often quickly reversible and associated with a specific event; one to five years.

Long-term: Reversible over a much longer period, or may occur continuously based on normal activity, or for more than five years.

Intensity of Impact: (All impacts *except* Special-Status Species and Historic Properties)

Negligible: The measurable or anticipated degree of change would not be detectable or would be only slightly detectable. Localized or at the lowest level of detection.

Minor: The measurable or anticipated degree of change would have a slight effect, causing a slightly noticeable change of approximately less than 20% compared with existing conditions; often localized.

Moderate: The measurable or anticipated degree of change is readily apparent and appreciable and would be noticed by most people, with a change likely to be between 21% and 50% compared with existing conditions; can be localized or widespread.

Major: The measurable or anticipated degree of change would be substantial, causing a highly noticeable change of approximately greater than 50% compared with existing conditions; often widespread.

Note: Historic Properties impacts are also initially characterized as noted above; however, the conclusion follows the format below, and makes a formal determination of effect under Section 106 of the NHPA. In accordance with National Park Service Management Policies *(2006), the analysis in this EA fulfills the responsibilities of the NPS under Section 106 of the NHPA.*

Impact Analysis for Historic Properties

This impact analysis methodology applies to the five types of historic properties as defined by Section 106 of the National Historic Preservation Act (NHPA): sites, districts, buildings, structures, and objects.

Section 106 of the NHPA requires a federal agency to take into account the effects of its undertakings on properties included in, or eligible for inclusion in, the *National Register of Historic Places* (NRHP), and provide the Advisory Council on Historic Preservation the reasonable opportunity to comment. The *1999 Park Programmatic Agreement Among The National Park Service At Yosemite, The California State Historic Preservation Officer and The Advisory Council On Historic Preservation Regarding Planning, Design, Construction, Operations And Maintenance, Yosemite National Park, California* (1999 PA) (2003b NPS) was developed among the National Park Service at Yosemite, the California State historic preservation officer, and the Advisory Council on Historic Preservation, in consultation with American Indian tribes and the public. The 1999 Programmatic Agreement (PA) governs the park's effort to take into account the effects of park planning and operations on historic properties.

NHPA Methods for Assessing Effect (Impact Analysis)

Pursuant to DO 12 sections 2.14(6) (3), 6.2 F, and 6.3 F, and Appendix 3, 40 CFR 1508.7, 1508.8, and 1508.27 and 36 CFR 800.8, impact intensity, duration, context, and type as they relate to historic properties, are determined with the criteria established in 36 CFR 800.5. NHPA defines the following types of effects:

> *No Effect:* Indicates that there are no historic properties in the area of potential effect (APE); or, there are historic properties in the APE, but the undertaking will not alter the characteristics that qualify it for inclusion in or eligibility for the NRHP.
>
> *No Adverse Effect:* Indicates that there will be an effect on the historic property as a result of the undertaking, but the effect is not adverse, meaning it will not alter characteristics that make it eligible for listing in the NRHP in a manner that would diminish the integrity of the property (see below).
>
> *Adverse Effect:* Indicates that the undertaking will alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later, be farther removed in distance, or be cumulative. An adverse effect may be resolved in accordance with Stipulation VIII: Resolution of Adverse Effects, of the 1999 PA.

Impact Measures under NHPA and NEPA

Conventional terms used by the NPS to measure the context (local, regional, national, or international), duration (short- or long-term), type (beneficial or adverse), and intensity (negligible, minor, moderate, or major) of impact under NEPA are not valid for assessing effects on historic properties under NHPA. Because the effect on a historic property is measured by the status of the historic property's eligibility for listing in the NRHP, the negligible, minor, moderate, and major degrees do not apply, and therefore satisfy neither the NHPA nor the NEPA requirements. Either a historic property maintains the characteristics making it eligible for listing in the NRHP, or it does not. It cannot, for example, be moderately eligible for listing in the NRHP. Significance of impact under NEPA would occur only when an adverse effect on the characteristics of an historic property making it eligible for listing in the NRHP cannot be resolved.

Context and Duration: The geographical context of a historic property is determined during the identification and evaluation process when it is determined whether it is of local, regional, national, or international significance. Because historic properties are nonrenewable, irreplaceable resources, duration of effect is "long-term" across the full range of actions from preservation to destruction.

Type and Intensity: Beneficial Effects as measured in NEPA are folded into the "No Adverse Effect" finding for NHPA. For example, a restoration of a historic structure may be considered "beneficial" under NEPA. NHPA, on the other hand, recognizes that the restoration will affect the historic property, but that the effect will not be adverse.

Direct or Indirect: Impact consideration is the same for NHPA and NEPA. Direct impacts are those caused by the action that will occur at the same time and place. Indirect impacts are those caused by the action later in time or at a distance from the action that are reasonably foreseeable (1508.8 (a) and (b), 36 CFR 800.5 (a) (1)).

Resolving Adverse Effects on Historic Properties: An adverse effect under Section 106 of NHPA can be resolved with a good faith effort to consider whether and how to avoid, reduce, resolve, or mitigate the effect, which could be done by modifying the undertaking; imposing certain mitigating conditions, such as photo documentation, treatment of historic buildings, structures, and landscapes in accordance with the Secretary of the Interior's Standards; or accepting the effect in the public interest. Yosemite's 1999 PA stipulates Standard Mitigation Measures that can be used to resolve adverse effects on historic structures, buildings, and landscapes. These measures are Recordation, Salvage, Interpretation, and NRHP Reevaluation.

Significant Impact: For the purposes of NEPA and DO 12, an impact on an NRHP property would be considered significant when an adverse effect could not be resolved by agreement among the SHPO, the ACHP, American Indian tribal governments, other consulting and interested parties, and the public. The resolution must be documented in a memorandum or programmatic agreement or in the NEPA decision document. Lack of resolution would signal a significant impact, triggering the necessity for an environmental impact statement.

Cumulative Impacts

Cumulative impacts are the effects on the resource (biological, physical, or sociocultural) that would result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions. Impacts are considered cumulative regardless of what agency or group (federal or nonfederal) undertakes the action.

The Council on Environmental Quality (CEQ) describes a cumulative impact as follows (Regulation 1508.7):

> *A "Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

The cumulative projects addressed in this analysis include past and present actions, as well as any planning or development activity currently being implemented, or planned for implementation in the reasonably foreseeable future. Cumulative actions are evaluated in conjunction with the impacts of an alternative to determine whether they have any additive effects on a particular resource. Because most of the cumulative projects are in the early planning stages, the evaluation of cumulative impacts was

based on a general description of the project. These projects are included in the cumulative effects analysis presented in this chapter.

Impairment

In addition to determining the environmental consequences of the preferred and other alternatives, National Park Service *Management Policies* (NPS 2006) and Director's Order 12, Conservation Planning, and Environmental Impact Analysis require analysis of potential effects to determine whether actions would impair park resources. In this EA, determinations of impairment are provided in the conclusion section under each resource topic for each alternative. Non-resource topics, such as Operations, are not analyzed for impairment. The following sections from the NPS *Management Policies* cited below define impairment and highlight the difference between an impact and impairment.

> *1.4.4 The Prohibition on Impairment of Park Resources and Values*
>
> *While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement… that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise.*
>
> *1.4.5 What Constitutes Impairment of Park Resources and Values*
>
> *The impairment … is an impact that …would harm the* ***integrity*** *(emphasis added) of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact to any park resource or value may, but does not necessarily, constitutes impairment. An impact would be more likely to constitute 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, or is key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or is identified in the park's general management plan or other relevant NPS planning documents as being of significance.*
>
> *An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated. An impact that may, but would not necessarily, lead to impairment may result from visitor activities; NPS administrative activities; or activities undertaken by concessioners, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park.*
>
> *1.4.6 What Constitutes Park Resources and Values*
>
> *The "park resources and values" that are subject to the no-impairment standard include: the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources, cultural landscapes, ethnographic resources, historic and prehistoric sites, structures and objects, museum collections, and native plants and animals.*

Table III-1. Summary of Environmental Consequences

Affected Environments	*Alternative 1:* *No Action*	*Alternative 2:* *Use Scenic Value to Determine Intensity of Vista Clearing*	*Alternative 3:* *Use Ecological Conditions to Determine Intensity of Vista Clearing* *(PREFERRED)*	*Alternative 4:* *Use Professional Team Assessment to Prioritize Vistas for Treatment*	*Alternative 5:* *Use Professional Team Assessment with Ecological Conditions to Determine Intensity of Vista Clearing*
	Scenic vistas would be reestablished at a rate of about three vistas per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. Vista clearing activity would be minimal.	The Visual Resource Assessment would assess vista point scenic value and treatment prioritization. Standardized clearing prescriptions would apply to vistas with low, medium, and high values.	Vistas would be prioritized for treatment using the Visual Resource Assessment. Site ecological conditions would determine the prescription for vegetation clearing.	Managers would have maximum flexibility in prioritizing and managing vistas. Factors such as the popularity or the facilities available at a site could be used to annually prioritize vistas for treatment. Standardized clearing prescriptions would apply to vistas with low, medium, and high values.	Vista prioritization flexibility would be emphasized. Factors such as the popularity or the facilities available at a site could be used to annually prioritize vistas for treatment. Site ecological conditions would determine vista clearing extent and intensity.
Wetlands	Impacts would be minimal on wetlands and expected to be long-term negligible adverse.	Management actions in wetlands would comply with NPS mandates, Executive Order 11990 requirements, riparian corridor mitigation measures, and mechanical equipment best management practices. Adverse impacts would be localized short-term minor.	Management actions in wetlands would comply with NPS mandates, Executive Order 11990 requirements, riparian corridor mitigation measures, and mechanical equipment best management practices. Adverse impacts would be localized short-term minor.	Management actions in wetlands would comply with NPS mandates, Executive Order 11990 requirements, riparian corridor mitigation measures, and mechanical equipment best management practices. Adverse impacts would be localized short-term minor.	Management actions in wetlands would comply with NPS mandates, Executive Order 11990 requirements, riparian corridor mitigation measures, and mechanical equipment best management practices. Adverse impacts would be localized short-term minor.
Vegetation	Adverse impacts would be long-term negligible.	Initial clearing impacts could include trampling, soil compaction, and ground disturbance. Tree and shrub removal could increase forest canopy gaps. Localized decreases in proportions of larger trees in cleared vista sites could occur. Trees would remain if older than the vista point. Adverse impacts would be	Restrictions on clearing would reduce the number of scenic vistas considered and increase protection to some habitat components. Initial clearing impacts could include trampling, soil compaction, and ground disturbance. Tree and shrub removal could increase forest canopy gaps. Localized decreases in	Initial clearing impacts could include trampling, soil compaction, and ground disturbance. Tree and shrub removal could increase forest canopy gaps. Localized decreases in proportions of larger trees in cleared vista sites could occur. Trees would remain if older than the vista point. Adverse impacts would be	Ecological conditions would reduce the number of scenic vistas considered and increase protection of some habitat components Initial clearing impacts could include trampling, soil compaction, and ground disturbance. Tree and shrub removal could increase forest canopy gaps. Localized decreases in

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		long-term minor.	proportions of larger trees in cleared vista sites could occur. Trees would remain if older than the vista point. Adverse impacts would be long-term minor.	long-term minor.	proportions of larger trees in cleared vista sites could occur. Trees would remain if older than the vista point. Adverse impacts would be long-term minor.
Special-Status Vegetation	Vista clearing activity in would be minimal, and the effect on special-status species is expected to be insignificant. Alternative 1 may affect, and is not likely to adversely affect, special-status plants.	If potential impacts on special-status plants cannot be mitigated, the proposed work site would be eliminated from consideration. Adverse impacts on special-status plant individuals and populations would be insignificant. Alternative 2 may affect, and is not likely to adversely affect, special-status plants.	If potential impacts on special-status plants cannot be mitigated, the proposed work site would be eliminated from consideration. Adverse impacts on special-status plant individuals and populations would be insignificant. Alternative 3 may affect, and is not likely to adversely affect, special-status plants.	If potential impacts on special-status plants cannot be mitigated, the proposed work site would be eliminated from consideration. Adverse impacts on special-status plant individuals and populations would be insignificant. Alternative 4 may affect, and is not likely to adversely affect, special-status plants.	If potential impacts on special-status plants cannot be mitigated, the proposed work site would be eliminated from consideration. Adverse impacts on special-status plant individuals and populations would be insignificant. Alternative 5 may affect, and is not likely to adversely affect, special-status plants.
Wildlife	Impacts on wildlife and wildlife habitat could include a slight loss of trees and understory, and slight increase in the availability of human food, trash, noise, and visual disturbance in localized areas. Adverse impacts would continue to be long-term negligible.	Tree and shrub removal could increase forest canopy gaps. Management actions would comply with FMP prescriptions, viewing area and feathering limitations, no old growth tree removal, mechanized equipment best management practices, and protective special-status species mitigations. Adverse impacts would be long-term negligible.	Ecological conditions would retain more valued habitat. Tree and shrub removal could increase forest canopy gaps. Clearing would comply with FMP prescriptions, viewing area and feathering limitations, no old growth tree removal, mechanized equipment best management practices, and protective special-status species mitigations. Adverse impacts would be long-term negligible.	Tree and shrub removal could increase forest canopy gaps. Clearing would comply with FMP prescriptions, viewing area and feathering limitations, no old growth tree removal, mechanized equipment best management practices, and protective special-status species mitigations. Adverse impacts would be long-term negligible.	Ecological conditions would retain more valued habitat. Tree and shrub removal could increase forest canopy gaps. Clearing would comply with FMP prescriptions, viewing area and feathering limitations, no old growth tree removal, mechanized equipment best management practices, and protective special-status species mitigations. Adverse impacts would be long-term negligible.

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Affected Environments	*Alternative 1: No Action*	*Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing*	*Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (PREFERRED)*	*Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment*	*Alternative 5: Use Professional Team Assessment with Ecological Conditions to Determine Intensity of Vista Clearing*
Special-Status Wildlife	Vista clearing activity in would be minimal, and the effect on special-status species is expected to be insignificant. Alternative 1 may affect, and is not likely to adversely affect, special-status wildlife.	If potential impacts on special-status wildlife cannot be mitigated, the proposed work site would be eliminated from consideration. Specific special-status bird species that prefer large coniferous trees could be affected. Management actions would comply with protective special-status species mitigations. With mitigation, adverse impacts on special-status wildlife would be insignificant. Alternative 2 may affect, and is not likely to adversely affect, special-status wildlife.	If potential impacts on special-status wildlife cannot be mitigated, the proposed work site would be eliminated from consideration. Specific special-status bird species that prefer large coniferous trees could be affected. Management actions would comply with protective special-status species mitigations. With mitigation, adverse impacts on special-status wildlife would be insignificant. Alternative 3 may affect, and is not likely to adversely affect, special-status wildlife.	If potential impacts on special-status wildlife cannot be mitigated, the proposed work site would be eliminated from consideration. Specific special-status bird species that prefer large coniferous trees could be affected. Management actions would comply with protective special-status species mitigations. With mitigation, adverse impacts on special-status wildlife would be insignificant. Alternative 4 may affect, and is not likely to adversely affect, special-status wildlife.	If potential impacts on special-status wildlife cannot be mitigated, the proposed work site would be eliminated from consideration. Specific special-status bird species that prefer large coniferous trees could be affected. Management actions would comply with protective special-status species mitigations. With mitigation, adverse impacts on special-status wildlife would be insignificant. Alternative 5 may affect, and is not likely to adversely affect, special-status wildlife.
Soils	Minimal vista clearing would have little impact on park soils. Adverse impacts would be long-term and minor.	Soils in or adjacent to vistas could be disturbed, causing erosion, compaction, and altered soil structure or hydrologic regime in both resilient and sensitive soils. With the reduction in social trails and the revegetation of previously compacted areas, there would be long-term benefits. There would be a short-term minor adverse impact on soils, but overall the alternative would have long-term negligible to minor benefits.	Soils in or adjacent to vistas could be disturbed, causing erosion, compaction, and altered soil structure or hydrologic regime in both resilient and sensitive soils. With the reduction in social trails and the revegetation of previously compacted areas, there would be long-term benefits. There would be a short-term minor adverse impact on soils, but overall the alternative would have long-term negligible to minor benefits.	Soils in or adjacent to vistas could be disturbed, causing erosion, compaction, and altered soil structure or hydrologic regime in both resilient and sensitive soils. With the reduction in social trails and the revegetation of previously compacted areas, there would be long-term benefits. There would be a short-term minor adverse impact on soils, but overall the alternative would have long-term negligible to minor benefits.	Soils in or adjacent to vistas could be disturbed, causing erosion, compaction, and altered soil structure or hydrologic regime in both resilient and sensitive soils. With the reduction in social trails and the revegetation of previously compacted areas, there would be long-term benefits. There would be a short-term minor adverse impact on soils, but overall the alternative would have long-term negligible to minor benefits.

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Hydrology and Water Quality	Minimal vista clearing would have little impact on park hydrology. Adverse impacts would be long-term and negligible.	Actions common to all and mitigations provide a framework for minimizing potential adverse impacts on hydrology and water quality due to equipment use. Adverse impacts would be short-term and negligible to minor.	Using ecological conditions would benefit wetland hydrologic regimes. Actions common to all and mitigations provide a framework for minimizing potential adverse impacts on hydrology and water quality due to equipment use. Adverse impacts would be short-term negligible to minor.	Actions common to all and mitigations provide a framework for minimizing potential adverse impacts on hydrology and water quality due to equipment use. Adverse impacts would be short-term negligible to minor.	Using ecological conditions would benefit wetland hydrologic regimes. Actions common to all and mitigations provide a framework for minimizing potential adverse impacts on hydrology and water quality due to equipment use. Adverse impacts would be short-term negligible to minor.
Air Quality	Minimal vista clearing would have little impact on park air quality.	Air quality would be temporarily affected due to increased air emissions from vegetation removal equipment use and prescribed burning activities. Impacts on air quality would be short-term localized minor to moderate, but negligible over the long-term.	Air quality would be temporarily affected due to increased air emissions from vegetation removal equipment use and prescribed burning activities. Impacts on air quality would be short-term localized minor to moderate, but negligible over the long-term.	Air quality would be temporarily affected due to increased air emissions from vegetation removal equipment use and prescribed burning activities. Impacts on air quality would be short-term localized minor to moderate, but negligible over the long-term.	Air quality would be temporarily affected due to increased air emissions from vegetation removal equipment use and prescribed burning activities. Impacts on air quality would be short-term localized minor to moderate, but negligible over the long-term.
Natural Quiet	Vista clearing activity would continue to be minimal; therefore, there would be a localized short-term minor to moderate adverse impact on natural quiet and natural soundscapes	Clearing actions would increase noise levels in the short-term with minor to moderate adverse impacts. Continued site maintenance would also have adverse impacts that would be minor to moderate, but likely shorter in duration. Chainsaws would not always be necessary.	Clearing actions would increase noise levels in the short-term with minor to moderate adverse impacts. Continued site maintenance would also have adverse impacts that would be minor to moderate, but likely shorter in duration. Chainsaws would not always be necessary.	Clearing actions would increase noise levels in the short-term with minor to moderate adverse impacts. Continued site maintenance would also have adverse impacts that would be minor to moderate, but likely shorter in duration. Chainsaws would not always be necessary.	Clearing actions would increase noise levels in the short-term with minor to moderate adverse impacts. Continued site maintenance would also have adverse impacts that would be minor to moderate, but likely shorter in duration. Chainsaws would not always be necessary.

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Geologic Hazards	Vista clearing activity would continue to be minimal; therefore, there would be a localized long-term minor adverse impact on rockfall risk at managed vista sites.	No vistas would be cleared if significantly located within geologic hazard zones as reviewed by the park geologist. There would be localized negligible increased risk of rockfall impact on park staff, visitors, and resources.	No vistas would be cleared if significantly located within geologic hazard zones as reviewed by the park geologist. There would be localized negligible increased risk of rockfall impact on park staff, visitors, and resources.	No vistas would be cleared if significantly located within geologic hazard zones as reviewed by the park geologist. There would be localized negligible increased risk of rockfall impact on park staff, visitors, and resources.	No vistas would be cleared if significantly located within geologic hazard zones as reviewed by the park geologist. There would be localized negligible increased risk of rockfall impact on park staff, visitors, and resources.
Global Climate Change	This alternative would have negligible impact on GHG emissions.	GHG emissions related to vista management would be generated by vegetation removal equipment, prescribed burning, and the reduction in carbon sequestration provided by vegetation. Adverse impacts on global climate change would be negligible.	GHG emissions related to vista management would be generated by vegetation removal equipment, prescribed burning and the reduction in carbon sequestration provided by vegetation Adverse impacts on global climate change would be negligible.	GHG emissions related to vista management would be generated by vegetation removal equipment, prescribed burning and the reduction in carbon sequestration provided by vegetation Adverse impacts on global climate change would be negligible.	GHG emissions related to vista management would be generated by vegetation removal equipment, prescribed burning and the reduction in carbon sequestration provided by vegetation Adverse impacts on global climate change would be negligible.
Wilderness	Vista clearing activity could continue to be minimal. The impact on park wilderness would be long-term minor beneficial.	This alternative could cause short-term localized negligible to minor indirect adverse impacts on wilderness areas adjacent to vista clearing due to noise from vehicles and mechanized equipment.	This alternative could cause short-term localized negligible to minor indirect adverse impacts in wilderness areas adjacent to vista clearing due to noise from vehicles and mechanized equipment.	This alternative could cause short-term localized negligible to minor indirect adverse impacts in wilderness areas adjacent to vista clearing due to noise from vehicles and mechanized equipment.	This alternative could cause short-term and localized negligible to minor indirect adverse impacts in wilderness areas adjacent to vista clearing due to noise from vehicles and mechanized equipment.

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Scenic Resources	Vistas could be lost as obscuring vegetation establishes so that it could not be removed. Adverse impacts on scenic resources would be localized long-term moderate.	There would be an increase in vista viewing opportunities for visitors. Vista management action would have minor localized short-term adverse impacts, but overall have long-term localized moderate beneficial impacts on scenic resources.	There would be an increase in vista viewing opportunities for visitors. Vista management action would have minor localized short-term adverse impacts, but overall have long-term localized moderate beneficial impacts on scenic resources.	There would be an increase in vista viewing opportunities for visitors. Vista management action would have minor localized short-term adverse impacts, but overall have long-term localized moderate beneficial impacts on scenic resources.	There would be an increase in vista viewing opportunities for visitors. Vista management action would have minor localized short-term adverse impacts, but overall have long-term localized moderate beneficial impacts on scenic resources.
Archeological and Ethnographic Resources	Existing impacts on archeological resources and traditional cultural properties (NHPA) would continue. Conifer encroachment has negatively impacted black oaks and would continue. Adverse impacts of actions would be mitigated by the 1999 Programmatic Agreement. Impacts on traditional cultural practices (NEPA) cannot be analyzed at this time. Ongoing consultation with the tribes would continue through the annual work plan review on a site-by-site basis to mitigate or avoid any adverse impacts.	The annual work plan review would identify sensitive and valuable resources and adverse effects on archeological resources and traditional cultural properties (NHPA) t avoided, or mitigated through the 1999 Programmatic Agreement. The VRA process gives additional consideration to clearing at traditional properties as identified through consultation. Impacts on traditional cultural practices (NEPA) cannot be analyzed at this time. On-going consultation with the tribes would continue through the annual work plan review on a site-by-site basis to mitigate or avoid any adverse impacts.	The annual work plan review would identify sensitive and valuable resources and adverse effects on archeological resources and traditional cultural properties (NHPA) avoided, or mitigated through the 1999 Programmatic Agreement. The VRA process gives additional consideration to clearing at traditional properties as identified through consultation. Impacts on traditional cultural practices (NEPA) cannot be analyzed at this time. Ongoing consultation with the tribes would continue through the annual work plan review on a site-by-site basis to mitigate or avoid any adverse impacts.	The annual work plan review would identify sensitive and valuable resources and adverse effects on archeological resources and traditional cultural properties (NHPA) avoided, or mitigated through the 1999 Programmatic Agreement. Impacts on traditional cultural practices (NEPA) cannot be analyzed at this time. Ongoing consultation with the tribes would continue through the annual work plan review on a site-by-site basis to mitigate or avoid any adverse impacts.	The annual work plan review would identify sensitive and valuable resources and adverse effects on archeological resources and traditional cultural properties (NHPA) avoided, or mitigated through the 1999 Programmatic Agreement. Impacts on traditional cultural practices (NEPA) cannot be analyzed at this time. Ongoing consultation with the tribes would continue through the annual work plan review on a site-by-site basis to mitigate or avoid any adverse impacts.

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Historic Structures and Cultural Landscapes	Views and vistas are a contributing characteristic in many historic structures, buildings, and cultural landscapes (1999 Programmatic Agreement). No adverse impacts would occur.	The annual work plan review would identify cultural resource concerns and provide a framework to avoid or minimize and mitigate potential adverse effects to historic structures and cultural landscapes. If adverse effects could not be avoided or mitigated, the vista would not be managed. This alternative would have no adverse effect.	The annual work plan review would identify cultural resource concerns and provide a framework to avoid or minimize and mitigate potential adverse effects to historic structures and cultural landscapes. If adverse effects could not be avoided or mitigated, the vista would not be managed. This alternative would have no adverse effect.	The annual work plan review would identify cultural resource concerns and provide a framework to avoid or minimize and mitigate potential adverse effects to historic structures and cultural landscapes. If adverse effects could not be avoided or mitigated, the vista would not be managed. This alternative would have no adverse effect.	The annual work plan review would identify cultural resource concerns and provide a framework to avoid or minimize and mitigate potential adverse effects to historic structures and cultural landscapes. If adverse effects could not be avoided or mitigated, the vista would not be managed. This alternative would have no adverse effect.
Visitor Experience and Recreation	Vista clearing activity would continue to be minimal. Impacts would be long-term minor adverse on visitor experience, recreation, and interpretation.	Actions such as revegetating sites and removing social trails would benefit the visitor. These actions could result in short-term localized minor to moderate adverse impacts, but provide localized long-term moderate beneficial impacts on visitor experience.	Actions such as revegetating sites and removing social trails would benefit the visitor. These actions could result in short-term localized minor to moderate adverse impacts but provide localized long-term moderate beneficial impacts on visitor experience.	Actions such as revegetating sites and removing social trails would benefit the visitor. These actions could result in short-term localized minor to moderate adverse impacts, but provide localized long-term moderate beneficial impacts on visitor experience.	Actions such as revegetating sites and removing social trails would benefit the visitor. These actions could result in short-term localized minor to moderate adverse impacts but provide localized long-term moderate beneficial impacts on visitor experience.

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Roads and Transportation	Conflicts between pedestrians and vehicles may increase at obscured vista sites. Impacts would be long-term minor adverse on roads and transportation.	Management may require temporary closures of turnouts, roads, or trails during management operations to ensure visitor safety. Reestablishing clear viewing areas could reduce pedestrian and traffic conflicts. This would result in localized short-term minor adverse impacts on park transportation, but also localized long-term negligible beneficial impacts on roads and transportation.	Management may require temporary closures of turnouts, roads, or trails during management operations to ensure visitor safety. Reestablishing clear viewing areas could reduce pedestrian and traffic conflicts. This would result in localized short-term minor adverse impacts on park transportation, but also localized long-term negligible beneficial impacts on roads and transportation.	Management may require temporary closures of turnouts, roads, or trails during management operations to ensure visitor safety. Reestablishing clear viewing areas could reduce pedestrian and traffic conflicts. This would result in localized short-term minor adverse impacts on park transportation, but also localized long-term negligible beneficial impacts on roads and transportation.	Management may require temporary closures of turnouts, roads, or trails during management operations to ensure visitor safety. Reestablishing clear viewing areas could reduce pedestrian and traffic conflicts. This would result in localized short-term minor adverse impacts on park transportation, but also localized long-term negligible beneficial impacts on roads and transportation.
Park Operations	Vista clearing activity would continue to be minimal. Impacts on park operations would be long-term negligible to minor adverse.	Vista clearing and management actions would increase. Park staff would need to create and review plans as well as carry out actions. Adverse impacts on park operations would likely be long-term negligible to minor.	Vista clearing and management actions would increase. Park staff would need to create and review plans, as well as carry out actions. Adverse impacts on park operations would likely be long-term negligible to minor.	Vista clearing and management actions would increase. Park staff would need to create and review plans, as well as carry out actions. Vista prioritization by Professional Team Assessment would make an additional annual demand on staff time to create plans. Adverse impacts on park operations would likely be long-term negligible to minor.	Vista clearing and management actions would increase. Park staff would need to create and review plans, as well as carry out actions. Vista prioritization by Professional Team Assessment would make an additional annual demand on staff time to create plans. Adverse impacts on park operations would likely be long-term negligible to minor.

WETLANDS

Affected Environment

Wetlands are lands in transition between terrestrial and aquatic systems, where the water table is usually at or near the surface, or shallow water covers the land (at least seasonally). Three key features characterize wetlands:

1) the presence of standing water throughout part of the growing season;

2) unique wetland soils; and

3) vegetation adapted to or tolerant of saturated soils. Hydrology is considered the primary driver of wetland ecosystems, creating wetland soils and leading to the development of wetland biotic communities

Wetlands are an important part of Yosemite's landscape, providing major contributions to ecosystem productivity and structural and biological diversity. High numbers of animals and plants in the Sierra Nevada depend on wetlands for all or part of their life cycle. Wetlands also perform vital hydrological processes such as flood abatement, sediment retention, groundwater recharge, nutrient capture, and decomposition of organic matter. Wetlands are considered highly valued resources in Yosemite and are afforded special protection under the Clean Water Act.

The NPS uses a system developed by the U.S. Fish and Wildlife Service (USFWS) (Cowardin, Carter, Golet, and LaRoe 1979) as the standard to define, classify, and inventory wetlands. In 1995, the USFWS mapped over 19,100 acres of wetland habitat in Yosemite as part of the *National Wetlands Inventory* (NWI) (Anderson 1995). *National Wetlands Inventory* (NWI) maps show a total of 693 acres of wetlands in the project area, including 154 acres of unvegetated river bottom, lakes, and ponds, as well as 548 acres of vegetated wetland.

Additionally, wetland vegetation was mapped during development of the 1997 Vegetation map, at a finer resolution than the NWI map. The 1997 *Vegetation* map shows 551 acres of wetland vegetation within the project area.

Yosemite wetlands occur in meadow, riparian, river, marsh, and pond habitats. Since historic times, wetland areas in the park were lost due to ditching, draining, or fill. About 17 of the 181 vista sites evaluated in the project area are within NWI wetlands, and an additional 13 vistas were identified that contained wetland vegetation. Wetland trees or shrubs obscure or partially obscure the vista at six of these sites.

Environmental Consequences

Methodology

The NPS manages wetlands in compliance with Executive Order 11990 (Wetland Protection), the Clean Water Act, and the Rivers and Harbors Appropriation Act of 1899, and in accordance with the procedures described in NPS Director's Order 77-1: Wetland Protection. Executive Order 11990 directs the NPS to: 1) provide leadership and take action to minimize the destruction, loss, or degradation of wetlands; 2) preserve and enhance the natural and beneficial values of wetlands; and 3) avoid direct and indirect support of new construction in wetlands unless no practicable alternatives exist. This analysis focuses on the potential for actions to impact the natural and beneficial values of wetlands. Examples of wetland values and functions include:

- biotic functions (e.g., fish and wildlife habitat, floral and faunal productivity, native species and

habitat diversity, special-status species);

- hydrologic functions (e.g., flood attenuation, streamflow maintenance, groundwater recharge and discharge, water supply, erosion and sediment control, water purification);
- cultural values (e.g., aesthetics, education, historical values, archeological values, recreation, interpretation); and
- research/scientific values (e.g., reference sites for research on unaffected ecosystems).

Type of Impact: This analysis identifies impacts as either beneficial or adverse. Impacts are considered adverse if implementation of an alternative would degrade the natural values, size, integrity, or connectivity of wetlands. Impacts are considered beneficial if implementation of an alternative would enlarge the size or enhance the natural values, integrity, or connectivity of wetlands.

Duration of Impact: The duration of an impact is the time required for wetlands to return to pretreatment conditions. The duration of wetland impacts is characterized as short-term or long-term. Short-term impacts are those that last up to ten years following the implementation of an alternative. Long-term impacts last longer than ten years after the implementation of an alternative.

Intensity of Impact: Intensity values focus on direct impacts on the physical attributes of a wetland, the natural values and integrity of the wetland, and the connectivity of the wetland to adjacent habitats. Negligible impacts would be imperceptible or undetectable. Minor impacts would be slightly detectable and localized within a small area. Moderate impacts would be apparent, with no potential to become major impacts. Major impacts would be substantial and highly noticeable, and could become permanent.

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or to determine the intensity of treatments. Maximum widths and depths for vista clearing would not be specified. Environmental compliance would take place on a case-by-case basis, and actions to protect wetlands would be applied to each vista under consideration. Vista clearing activity would be minimal, and the effect on wetlands would be expected to be long-term negligible adverse.

Cumulative Impacts

Cumulative impacts on wetland resources are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region in conjunction with the potential effects of this alternative. Over half of the wetland area around the globe has been lost, and much of remaining wetland area is degraded (Zedler and Kercher 2004). Drainage for agriculture has been the primary cause of wetland loss to date; as of 1985, an estimated 26% of the global wetland area has been drained for intensive agriculture. Wetlands are the most altered and impaired habitat of the Sierra Nevada, and, as a small proportion of the landscape, are relatively rare (Hughes 1934; SNEP 1996). Dams, roads, and diversions in the Sierra Nevada have had a profound effect on streamflow patterns and water temperatures. Broad valleys with wide riparian wetlands were often used as reservoir sites. Much of the flat-water on the western slope of the Sierra Nevada below 5,000 feet in elevation is artificial. These past actions have had long-term adverse effects on regional wetland habitats.

Present and future regional activities would have both beneficial and adverse impacts on wetlands. Some of the regional and local actions could take place in the vicinity of wetlands. Parkwide planning efforts such as the Merced and Tuolumne Wild and Scenic comprehensive management plans and the *High Elevation Aquatic Ecosystem Recovery and Stewardship Plan* would provide comprehensive wetland protection. Actions such as the Henness Ridge Environmental Education Campus, Tioga Trailheads Project, Crane Flat Utilities Project, and road rehabilitation on Tioga Road, Glacier Point Road, Valley Loop Road, and Wawona Road are not expected to impact wetlands. Smaller ecological restoration projects would restore native wetland habitat. Present and future regional actions would have localized long-term moderate beneficial impacts on wetlands.

Past impacts on wetlands have been adverse long-term major. Present and foreseeable future actions would contribute to reversing the major adverse impacts of past actions in California, and would produce long-term minor beneficial effects on wetlands. These past, present, and future effects, along with the localized long-term negligible adverse impacts of Alternative 1, would result in long-term adverse minor impacts on wetlands.

Impairment

Vista clearing activity would be minimal. Effects on wetlands are expected to be long-term negligible adverse. Because long-term impacts on wetlands associated with Alternative 1 would be negligible and adverse, Alternative 1 would not impair the wetland resources in Yosemite for future generations.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment.

About 17 surveyed vista sites in the project area are within identified wetlands, and an additional 13 sites have wetland vegetation within the vista. Wetland trees or shrubs obscure or partially obscure the vista at six of these sites.

Resource managers would review annual work plans prior to implementation, and insure that proposed vista management actions are in compliance with NPS mandates and the requirements of Executive Order 11990 (Protection of Wetlands), the Clean Water Act, the Rivers and Harbors Appropriation Act of 1899, and procedures described in Director's Order 77-1 (Wetland Protection). If potential impacts on wetlands could not be mitigated, including impacts that could degrade natural wetland processes, functions, or values, the proposed work site would be eliminated from consideration. For example, any proposed actions in wetlands must not degrade native plant and animal communities, habitat quality, floral and faunal productivity, and natural biodiversity.

Additional mitigation measures would be enacted to protect riparian corridors. Most often classified as wetlands, riparian ecosystems are found at the intersection of aquatic and terrestrial habitats, supporting unique and rich biotic communities. Mitigation measures would limit the clearing of key riparian vegetation, including willow shrubs, cottonwood trees, and white alder trees. Mitigation would also limit the removal of any tree immediately adjacent to the edge of water, limit the removal of in-stream downed large woody debris, and place restrictions on the use of heavy equipment. The standard clearing prescription would protect snags in medium-value vistas, unless removing them were deemed critical to establishment of the vista.

Actions to develop and review of annual work plans in terms of wetland regulations, law and policy, as well as the application of mitigation measures, including best management practices regarding mechanical equipment, would protect wetlands. With the application of these protective measures, there would be localized short-term minor adverse impacts on wetlands under Alternative 2.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting wetlands would be the same as those under Alternative 1. Past impacts on wetlands have been adverse long-term major. Present and foreseeable future actions would contribute to reversing the major adverse impacts of past actions in California, and would produce long-term minor beneficial effects on wetlands. These past, present, and future effects, along with the localized short-term minor adverse impacts of Alternative 2, would result in long-term adverse minor impacts on wetlands.

Impairment

The application of mitigation measures, including best management practices regarding mechanical equipment, would protect wetland values. Review of annual work plans in terms of wetland regulations, law and policy would protect wetlands. With these protective measures, there would be localized short-term minor adverse impacts on wetlands under Alternative 2. Because impacts on wetlands associated with Alternative 2 would be minor, Alternative 2 would not impair the park's wetland resources for future generations.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the Ecological Conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas.

About 17 vista sites in the project area are within identified wetlands, and an additional 13 sites contain wetland vegetation within the vista. Wetland trees or shrubs obscure or partially obscure the vista at six of these sites. As Ecological Conditions at each site would set limits on clearing, habitat components with high biological value would remain.

Resource managers would review annual work plans prior to implementation, and would insure that actions would be in compliance with NPS mandates and the requirements of Executive Order 11990 (Protection of Wetlands), the Clean Water Act, the Rivers and Harbors Appropriation Act of 1899, and procedures described in Director's Order 77-1 (Wetland Protection). If potential impacts on wetlands could not be mitigated, including impacts that could degrade natural wetland processes, functions, or values, the proposed work site would be eliminated from consideration. For example, any actions in wetlands must not degrade native plant and animal communities, habitat quality, floral and faunal productivity, and natural biodiversity.

Additional mitigation measures would be enacted to protect riparian corridors. Most often classified as wetlands, riparian ecosystems are found at the intersection of aquatic and terrestrial habitats, where they support unique and rich biotic communities. Mitigation measures would limit the clearing of key riparian vegetation, including willow shrubs, cottonwood trees, and white alder trees. Mitigation would

also limit the removal of any tree immediately adjacent to the edge of water, limit the removal of in-stream downed large woody debris, and place restrictions on the use of heavy equipment. The standard clearing prescription would protect snags in medium-value vistas, unless removing them were deemed critical to establishment of the vista.

Actions to develop and review annual work plans in terms of wetland regulations, law and policy, and the application of mitigation measures, including best management practices regarding mechanical equipment, would protect wetlands. With the application of these protective measures, there would be localized short-term minor adverse impacts on wetlands under Alternative 3.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting wetlands would be the same as those under Alternative 1. Past impacts on wetlands have been adverse long-term major. Present and foreseeable future actions would contribute to reversing the major adverse impacts of past actions in California and would produce long-term minor beneficial effects on wetlands. These past, present, and future effects, along with the localized short-term minor adverse impacts of Alternative 3, would result in long-term adverse minor impacts on wetlands.

Impairment

The application of mitigation measures, including best management practices regarding mechanical equipment, would protect wetland values. Review of annual work plans in terms of wetland regulations, law and policy, would protect wetlands. With these protective measures, there would be localized short-term minor adverse impacts on wetlands under Alternative 3. Because impacts on wetlands associated with Alternative 3 would be minor, Alternative 3 would not impair the park's wetland resources for future generations.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

This alternative is the most flexible in terms of prioritizing and managing vistas. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for treatment on an annual basis. Once vistas were prioritized for treatment, park staff would apply a standardized clearing prescription as in Alternative 2 (Table 2-X). About 181 vistas would be considered for initial treatment, continuing at a rate of about 30 each year.

About 17 vista sites in the project area are within identified wetlands, and an additional 13 sites have wetland vegetation within the vista. Wetland trees or shrubs obscure or partially obscure the vista at six of these sites.

Resource managers would review annual work plans prior to implementation, and insure that actions would be in compliance with NPS mandates and the requirements of Executive Order 11990 (Protection of Wetlands), the Clean Water Act, the Rivers and Harbors Appropriation Act of 1899, and procedures described in Director's Order 77-1 (Wetland Protection). If potential impacts on wetlands could not be mitigated, including impacts that could degrade natural wetland processes, functions, or values, the proposed work site would be eliminated from consideration. For example, any actions in wetlands must not degrade native plant and animal communities, habitat quality, floral and faunal productivity, and natural biodiversity.

Additional mitigation measures would be enacted to protect riparian corridors. Most often classified as wetlands, riparian ecosystems are found at the intersection of aquatic and terrestrial habitats, where they support unique and rich biotic communities. Mitigation measures would limit the clearing of key riparian vegetation, including willow shrubs, cottonwood trees, and white alder trees. Mitigation would also limit the removal of any tree immediately adjacent to the edge of water, limit the removal of in-stream downed large woody debris, and place restrictions on the use of heavy equipment. The standard clearing prescription would protect snags in medium-value vistas, unless removing them were deemed critical to establishment of the vista.

Actions to develop and review annual work plans in terms of wetland regulations, law and policy, and the application of mitigation measures, including best management practices regarding mechanical equipment, would protect wetlands. With the application of these protective measures, there would be localized short-term minor adverse impacts on wetlands under Alternative 4.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting wetlands would be the same as those under Alternative 1. Past impacts on wetlands have been adverse long-term major. Present and foreseeable future actions would contribute to reversing the major adverse impacts of past actions in California and would produce long-term minor beneficial effects on wetlands. These past, present, and future effects, along with the localized short-term minor adverse impacts of Alternative 4, would result in long-term adverse minor impacts on wetlands.

Impairment

The application of mitigation measures, including best management practices regarding the use of mechanical equipment, would protect wetland values. Review of annual work plans in terms of wetland regulations, law and policy, would protect wetlands. With these protective measures, there would be localized short-term minor adverse impacts on wetlands under Alternative 4. Because impacts on wetlands associated with Alternative 4 would be minor, Alternative 4 would not impair the park's wetland resources for future generations.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

This alternative emphasizes flexibility in prioritizing vistas for management and uses Ecological Conditions for determining the extent and intensity of vista clearing. A team of park professionals would prioritize vistas for management on an annual basis in the same manner as in Alternative 4. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for management. The Ecological Conditions at each vista site would determine the prescription for vegetation clearing in the same manner as in Alternative 3 (see Table II-8). About 167 vistas would be considered for initial treatment, continuing at a rate of about 30 each year.

About 17 vista sites in the project area are within identified wetlands, and an additional 13 sites have wetland vegetation within the vista. Wetland trees or shrubs obscure or partially obscure the vista at six of these sites.

Resource managers would review annual work plans prior to implementation, and insure that actions would be in compliance with NPS mandates and the requirements of Executive Order 11990

(Protection of Wetlands), the Clean Water Act, the Rivers and Harbors Appropriation Act of 1899, and procedures described in Director's Order 77-1 (Wetland Protection). If potential impacts on wetlands could not be mitigated, including impacts that could degrade natural wetland processes, functions, or values, the proposed work site would be eliminated from consideration. For example, any actions in wetlands must not degrade native plant and animal communities, habitat quality, floral and faunal productivity, and natural biodiversity.

Additional mitigation measures would be enacted to protect riparian corridors. Most often classified as wetlands, riparian ecosystems are found at the intersection of aquatic and terrestrial habitats, where they support unique and rich biotic communities. Mitigation measures would limit the clearing of key riparian vegetation, including willow shrubs, cottonwood trees, and white alder trees. Mitigation would also limit the removal of any tree immediately adjacent to the edge of water, limit the removal of in-stream downed large woody debris, and place restrictions on the use of heavy equipment. The standard clearing prescription would protect snags in medium-value vistas, unless removing them were deemed critical to establishment of the vista.

Actions to develop and review annual work plans in terms of wetland regulations, law and policy, and the application of mitigation measures, including best management practices regarding the use of mechanical equipment, would protect wetlands. With the application of these protective measures, there would be localized short-term minor adverse impacts on wetlands under Alternative 5.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting vegetation would be the same as those under Alternative 1. Past impacts on wetlands have been adverse long-term major. Present and foreseeable future actions would contribute to reversing the major adverse impacts of past actions and would produce long-term minor beneficial effects on wetlands. These past, present, and future effects, along with the localized short-term minor adverse impacts of Alternative 5, would result in long-term adverse minor impacts on wetlands.

Impairment

The application of mitigation measures, including best management practices regarding the use of mechanical equipment, would protect wetland values. Review of annual work plans in terms of wetland regulations, law and policy, would protect wetlands. With these protective measures, there would be localized short-term minor adverse impacts on wetlands under Alternative 5. Because impacts on wetlands associated with Alternative 5 would be minor, Alternative 5 would not impair the park's wetland resources for future generations.

VEGETATION

Affected Environment

Vegetation in Yosemite is diverse; over 1,427 vascular plant species have been documented in the park. These plant species represent nearly 23% of the known plants within California, despite the fact that Yosemite makes up less than 1% of the area of the state. This remarkable floristic diversity can be

attributed in large part to the steep elevation gradient of the Sierra Nevada and physical factors such as hydrology and climate.

The major forest and chaparral vegetation communities in the park have evolved for thousands of years under the influence of fire regimes. Adaptations to fire regimes are evident at the species, community, and ecosystem levels. Fire is also an important factor in lowland grass-herb communities and xeric montane meadows. In the more mesic and hydric communities, such as subalpine and alpine meadows, the influence of fire is probably minimal (van Wagtendonk 1986). In addition to natural fire regimes, prehistoric burning by Native Americans had a profound effect on plants at the species, community, and ecosystem levels (Lewis 1973).

Vegetation Zones

This plan classifies vegetation using the vegetation types described in the 2003 *Yosemite Fire Management Plan* (FMP), and supplemented with the vegetation types described in the *Vegetation Management Plan for Yosemite National Park.* The latter plan is based on the vegetation types presented in *The Manual for California Vegetation* (Keeler-Wolf 1992). Vegetation in the project area (13,028 acres/5,272 ha) was categorized into eight broad zones: foothill woodland, montane meadow, lower montane forest, upper montane forest, subalpine meadow, and subalpine forest, barren, or water. Each of these zones was further divided into vegetation types (see Table III-2).

Vegetation Zone Descriptions

Foothill Woodlands

This zone occurs along the western edge of the park (including the El Portal Administrative Site), below 600 m in elevation. This zone is divided into three primary vegetation types – foothill chaparral, blue oak, and foothill pine/live oak/chaparral. Less than 1% of the vistas addressed in this plan are located in the foothill woodland zone. This zone is characterized by a Mediterranean climate; winters are cool and wet, and summers are hot and dry. Nearly all precipitation occurs within the winter months, generally in the form of rain in the lower elevations and snow at higher elevations.

Foothill woodlands are strongly impacted by fire exclusion, and as a result, they can support large, fast-moving wildfires. Vegetation in this zone tends to be dominated by a mosaic of grass and thick brush, with scattered oak and conifer trees. Trees tend to be widely spaced and rarely form closed canopies. See Table III-2, Appendix B: Ecological Conditions, and Appendix I: Fire Management Plan Vegetation Composition Target Conditions for more detailed descriptions.

Upper and Lower Montane Meadows

Upper and lower montane meadows are found between 1,200 and 2,400 m in elevation. About 17% of the vistas addressed in this plan are located in montane meadows. Montane meadows are most common on the rolling plateaus to the north and south of Yosemite Valley. Meadows in the lower montane are often surrounded by California black oak and ponderosa pine/bear clover forest, and meadows in the upper montane are usually bordered by red fir forest. Further details are described in Table III-2, Appendix B: Ecological Conditions, and Appendix I: Fire Management Plan Vegetation Composition Target Conditions.

Table III-2. Yosemite vegetation zones and types found within the Scenic Vista Management Plan affected environment

Vegetation Zone	Vegetation Type	Acres Affected
Foothill Woodlands	Foothill chaparral	2
	Foothill pine/live oak/chaparral woodland	76
	California black oak woodland	4
Lower Montane Meadow	Lower montane meadows	230
Lower Montane Forests	Montane chaparral	236
	Canyon live oak forest	357
	California black oak woodland	145
	Riparian woodland	135
	Ponderosa pine/bear clover forest	441
	Ponderosa pine/mixed-conifer forest	4,563
	White fir/mixed-conifer forest	2,467
	Giant sequoia/mixed-conifer forest	122
Upper Montane Meadow	Upper montane meadows	28
Upper Montane Forests	Montane chaparral	22
	Riparian woodland	13
	Western white pine/Jeffrey pine forest	642
	Red fir forest	1,216
	Sierra juniper	20
Subalpine Meadows	Subalpine meadow	312
Subalpine Forests	Riparian	4
	Lodgepole pine forest	1,751
	Whitebark pine/mountain hemlock forest	46
Urban/Developed		58
Barren		116
Water		22
Total Acres		**13,028**

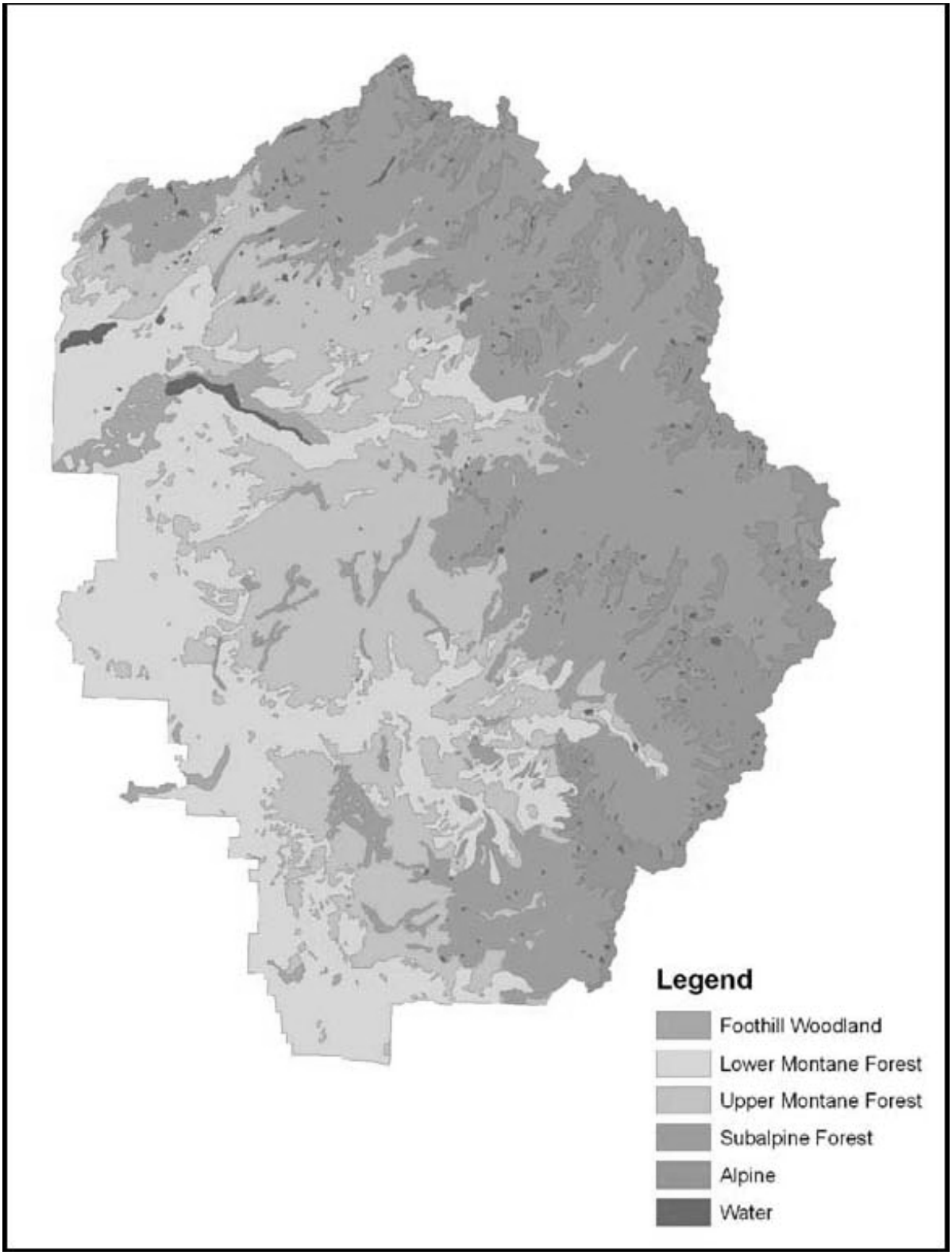

Figure III-1. Vegetation Zones in Yosemite National Park. (AIS 2007)

Lower Montane Forest

This zone covers a large portion of the east side of the park, extending westward up the Tuolumne canyon and into Yosemite Valley between 900 and 1,800 m in elevation. About 65% of the vistas addressed in this plan are located in lower montane forest. This zone is divided into six vegetation types: canyon live oak, California black oak woodland, riparian woodland, ponderosa pine/bear clover forest, white fir/mixed conifer, giant sequoia/mixed conifer forest, and ponderosa pine/mixed conifer. Trees may be very large, although the spacing between trees may be greater than in upper montane forests.

The lower montane forest zone is heavily influenced by fire exclusion, and Yosemite's prescribed fire program is very active in this zone. This mid elevation zone is the lowest zone that regularly receives a majority of its precipitation in the form of snow. Further details are described in Table III-2, Appendix B: Ecological Conditions, and Appendix I: Fire Management Plan Vegetation Composition Target Conditions.

Upper Montane Forest

This zone encompasses mid elevation portions of the park between 1,800 and 2,400 m in elevation. This zone contains the following vegetation types: montane chaparral, western white pine/jeffrey pine forest, red fir forest, and Sierra juniper forest. About 15% of the vistas addressed in this plan are located in upper montane forest. The climate in this zone is characterized by short, cool summers and cold winters. Nearly all precipitation in this zone takes the form of snow. Further details are described in Table III-2, Appendix B: Ecological Conditions, and Appendix I: Fire Management Plan Vegetation Composition Target Conditions.

Subalpine Meadows

Subalpine meadows exist between 2,600 and3,300 m in elevation. About 2% of the vistas addressed in this plan are located in upper montane forest. Meadows vary in size from one acre/0.4 ha or less to 700 acres/300 ha. Subalpine meadows are subdivided into wet and dry types, with characteristic species including grasses, sedges, and perennial herbaceous dicots. Wet and dry subtypes may live in the same meadow. Tuolumne Meadows, Parker Pass Creek, Gaylor Lakes Basin, and upper Rafferty Creek are typical examples of this vegetation type.

Depending on hydrologic regime, characteristic species include sedges (*Carex* spp.), tufted hair grass (*Deschampsia cespitosa*), Brewer's reed grass (*Calamagrostis breweri*), short-hair sedge (*Carex filifolia* var. *erostrata*), King's ricegrass (*Ptilagrostis kingii*), mountain timothy (*Phleum alpinum*), and groundsel (*Senecio triangularis*). These meadows exist on fine-textured, more or less permanently moist or wet soils. The growing season is limited by moisture, snow, and cold temperatures. Wet meadows remain saturated throughout the growing season, which is limited by snow in the spring and early summer. Dry meadow vegetation may form around a wet meadow. Subalpine meadows are usually surrounded by the lodgepole pine or whitebark pine forests.

Lightning strikes are extremely frequent at these elevations, and lightning fire incidence is moderate in adjacent forested communities. Fires generally do not spread into subalpine meadow communities on mesic sites because the dense herbaceous growth remains green until the end of the fire season, and live fuel moisture remains too high to support fire. On xeric sites, vegetative cover is too sparse to carry fire even after the herbaceous plants have cured late in the fire season. Fire does not play an important role in the ecology of this vegetation type.

Further details are described in Table III-2, Appendix B: Ecological Conditions, and Appendix I: Fire Management Plan Vegetation Composition Target Conditions.

Subalpine Forests

This zone ranges from 2,070 m in elevation up to tree line, covering 35% of the park. The subalpine forest zone is made up of two vegetation types: whitebark pine/mountain hemlock, and lodgepole pine. About 14% of the vistas addressed in this plan are located in subalpine forests. This zone has a short growing season due to long, cold, snowy winters, which typically accumulate one to three meters of snow. This zone has not been strongly affected by fire exclusion. Further details are described in Table III-2, Appendix B: Ecological Conditions, and Appendix I: Fire Management Plan Vegetation Composition Target Conditions.

Urban/Developed

This zone includes cultivated areas such as golf courses, lawns, and orchards (most of which are in Yosemite Valley and Wawona). Fewer than 1% of the vistas addressed in this plan are located in urban/developed zones.

Barren

This zone includes rock (barren rock, domes, and talus) and sparsely vegetated areas. Fewer than 1% of the vistas addressed in this plan are located in barren zones.

Water

Fewer than 1% of the vistas addressed in this plan are located in water zones, which include lakes and ponds.

Exotic Species

Nearly 200 nonnative plant species have been documented in Yosemite. Although some of the nonnative species (such as apple trees) do not have the ability to spread into natural areas, many are invasive and have the potential to disrupt natural systems completely. The greatest concentrations of invasive plant species are located in lower elevations along the eastern side of the park and in Yosemite Valley. A list of invasive plant species present in the park is included in Appendix F: Parkwide Nonnative Plant List.

Environmental Consequences

Methodology

Changes in the size, continuity, and integrity of native vegetation community structure were used to evaluate impacts on vegetation due to scenic vista management activities. Impacts on these communities were assessed in terms of type, duration, and intensity of impact, as discussed below.

Type of Impact: This analysis identifies potential impacts as either beneficial or adverse. Impacts are considered adverse if implementation of an alternative would reduce the size, continuity, or integrity of a native vegetation community (vegetation zone and corresponding types). Impacts are considered beneficial if implementation of an alternative would increase the size, continuity, or integrity of a native vegetation community (vegetation zone and corresponding types).

Duration of Impact: The duration of an impact is the time required for native vegetation communities to recover to pretreatment conditions. The duration of impact is characterized as short-term or long-term.

Short-term impacts on vegetation are those that would last up to 20 years following the implementation of an alternative. Long-term impacts would last longer than 20 years after the implementation of an alternative.

Intensity of Impact: The intensity of an impact on vegetation is a measure of perceptible changes in native vegetation community size, continuity, or integrity. Impact intensity is characterized as negligible, minor, moderate, or major. Negligible impacts are those that would have no measurable or perceptible changes on native vegetation community size, continuity, or integrity. Minor impacts would be measurable or perceptible, but would be localized within an isolated area, and the overall viability of the native vegetation community would not be affected. Moderate impacts would cause a measurable and perceptible change in the native vegetation community (e.g., size, continuity, or integrity); however, the impact would remain localized and could be reversed. Major impacts would be substantial and highly noticeable, and could be permanent in their effects on native vegetation community size, diversity, continuity, or integrity.

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. Standardized mitigations to protect vegetation would not apply to vista clearing activities. Maximum widths and depths for vista clearing would not be specified. Vista clearing activity would continue to be minimal, resulting in a long-term negligible adverse impact on vegetation within the project area.

Cumulative Impacts

Cumulative impacts on vegetation are based on analysis of past, present, and reasonably foreseeable future actions in California and the Yosemite region in conjunction with the potential effects of this alternative. In the past 150 years, activities associated with urbanization in California (e.g., building construction, utility installation, road and bridge building, stormwater discharge), livestock, and agriculture contributed to adverse impacts on vegetation (D'Antonio 2004). Impacts range from direct loss of ecosystems to indirect losses such as changes in water flows that sustain vegetative habitat. The overall effect of statewide trends on vegetation has been adverse long-term major. In addition, climate change and resultant changes in vegetation should increase in intensity or rate as the climate continues to change (D'Antonio 2004; Mutch 2007).

The magnitude of past impacts on vegetation correlates with the spread of invasive plants in California. While fewer than 10% of the 1,000-plus (Hickman 1993) nonnative plant taxa that have established in California are recognized as serious threats, nonnative plants have changed the landscape of California dramatically. The combined actions of state and local programs to control invasive plant species would have a long-term beneficial impact on vegetation.

In Yosemite, past activities have had beneficial and adverse impacts on vegetation. Past actions that have impacted native vegetation within the project area include the construction of Wawona Road, El Portal Road, Big Oak Flat Road, and development in Yosemite Valley. Early development and land management in Yosemite Valley included tree cutting for infrastructure construction and installation, as well as plowing, fencing, seeding, and the ditching of meadows for livestock cultivation and farming (Gibbens 1964).

Parkwide planning efforts such as the Merced and Tuolumne Wild and Scenic comprehensive management plans would provide large-scale watershed protection to plant communities. Prescribed

fire and managed wildland fire activities would greatly reduce the threat of large high-severity catastrophic fires, and would reduce the potential for vegetation type conversion. Current planning processes that may have a localized adverse effect on vegetation include the Communication Data Network, Utilities Master Plan, Yosemite Institute Environmental Education Campus, the Tioga Trailheads Project, Crane Flat Utilities, and the Glacier Point, Valley Loop, Tioga, and Wawona roads rehabilitation. Recent ecological restoration actions work to restore native plant communities.

Past impacts on vegetation have been adverse long-term major. Present and foreseeable future actions such as comprehensive plans would contribute to reversing the major adverse impacts of past actions on vegetation in California, and would produce long-term moderate beneficial effects on vegetation. These past, present, and future effects, along with the long-term negligible adverse impacts of Alternative 1, would result in a long-term moderate adverse impact on vegetation.

Impairment

Under Alternative 1, the NPS would continue to restore scenic vistas at a rate of about three per decade. Vista clearing activity would be minimal, and impacts on vegetation would be long-term adverse negligible. Alternative 1 would not impair the park's vegetation communities for future generations.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment.

The impacts of initial clearing on vegetation could include removing trees and shrubs, as well as creating new gaps in the forest canopy. "Actions Common to All Action Alternatives" would establish a framework for clearing activities. Vistas would be cleared to tree densities that meet, or are less than, those prescribed in the *Fire Management Plan for Yosemite* (FMP) (NPS 2004b). The maximum size for viewing areas and feathering would be limited. Old growth trees would not be removed. There would be best management practices established regarding the use of mechanized equipment. Sites would be revegetated, and annual work plans would be posted for public viewing. Mitigation measures would be enacted to protect riparian corridors and soils.

Under Alternative 2, additional limits on vegetation clearing in high-value vistas would be minimal. The standard clearing prescription would protect snags in medium-value vistas, unless removing them were deemed critical to establishment of the vista, and limit initial clearing activities to the foreground in low-value vistas.

Localized short-term adverse impacts could include trampling, soil compaction, and ground disturbance. In addition, there is likely to be a localized decrease in the proportion of larger trees in areas where vistas have been cleared. However, old growth trees would not be removed, and trees would remain if they are older than the year in which the vista point was established. These actions would minimize decreases of larger trees at vista points.

Under Alternative 2, thresholds on the size and density of vista clearing would limit clearing activities. There would be no comprehensive measures to protect specific habitat elements (as in alternatives 3 and 5). Mitigation measures would protect special-status plants and riparian plant communities. There would be a long-term minor adverse impact on native vegetation in Yosemite.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting vegetation would be the same as those under Alternative 1. Overall, local and regional present and foreseeable future actions would produce a long-term moderate beneficial effect on vegetation. Present and foreseeable future actions would contribute to reversing the major adverse impacts of past actions on vegetation in California. These effects, along with the long-term minor adverse impacts of Alternative 2, would result in a long-term minor adverse impact on vegetation.

Impairment

Under Alternative 2, thresholds on the size and density of vista clearing would limit clearing activities. There would be no comprehensive measures to protect specific habitat elements (as in alternatives 3 and 5). Mitigation measures would protect special-status plants and riparian plant communities. Overall, there would be a long-term minor adverse impact on native vegetation. As impacts would be minor and adverse, Alternative 2 would not impair vegetation resources for future generations.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas.

The impacts of initial clearing could include removing trees and shrubs, and opening gaps in the forest canopy. “Actions Common to All Action Alternatives” would establish a framework for clearing activities. Vistas would not be cleared to tree densities that are less than those prescribed in the FMP (NPS 2004b). The maximum size for viewing areas and feathering would be limited. Old growth trees would not be removed. Best management practices would be established regarding the use of mechanized equipment. Sites would be revegetated, and annual work plans would be posted for public viewing. Mitigation measures would be enacted to protect wildlife, special-status plants, riparian corridors, soils, air quality, and cultural resources.

Under Alternative 3, most habitat components with particularly high value would remain, unless removing them were deemed critical to establishment of the vista. Most snags in subalpine communities would remain. Most large ponderosa pine and sugar pine snags in upper montane forest would remain. In lower montane and foothill zones, California black oak would be protected, unless removing it were deemed critical to establishment of the vista.

In medium-value vistas, no clearing would take place in the midground of subalpine forest vistas, and snags would be protected unless locally common. In the upper montane forest, no clearing would take place in the midground of a vista, and underrepresented species (per the FMP) would be protected. California black oak would be protected in lower montane vistas, and sugar pine would remain unless locally common. In foothill zones, California black oak would be protected unless removing it were deemed critical to establishment of the vista.

In low-value vistas, no initial clearing would take place. Maintenance actions would be acceptable in the foreground of lower and upper montane forest and subalpine or montane meadows. No red fir, Sierra juniper, sugar pine, broadleaved trees, or snags would be removed from low-value vistas.

Restrictions on clearing would reduce the number of scenic vistas considered for treatment and increase protection to habitat components of particular biological importance. The "Actions Common to All Action Alternatives" provides sideboards that limit the size and density of clearing activities and protect old growth trees. Localized short-term adverse impacts could include trampling, soil compaction, and ground disturbance. In addition, there is likely to be a localized decrease in the proportion of larger trees in areas where vistas have been cleared. However, old growth trees would not be removed, and trees would remain if they are older than the year in which the vista point was established. These actions would minimize decreases of larger trees at vista points. Overall, there would be a long-term minor adverse impact on native vegetation in Yosemite.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting vegetation would be the same as those under Alternative 1. Overall, local and regional present and foreseeable future actions would produce a long-term moderate beneficial effect on vegetation. Present and foreseeable future actions would contribute to reversing the major adverse impacts of past actions on vegetation in California. These effects, along with the long-term minor adverse impacts of Alternative 3, would result in a long-term minor adverse impact on vegetation.

Impairment

Under Alternative 3, thresholds on the size and density of vista clearing, and protection of specific habitat components would protect vegetation of particular biological importance. There would be short-term minor adverse impact on vegetation as trees and shrubs are cleared and revegetation activities take place. Mitigation measures would protect special-status plants and riparian plant communities. Overall, there would be a long-term minor adverse impact on native vegetation in Yosemite. As impacts would be minor and adverse, Alternative 3 would not impair vegetation resources for future generations.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

This alternative is the most flexible in terms of prioritizing and managing vistas. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for treatment on an annual basis. Once vistas were prioritized for treatment, park staff would apply a standardized clearing prescription as in Alternative 2 (Table II-3). About 181 vistas would be considered for initial treatment, continuing at a rate of about 30 each year.

The impacts of initial clearing could include removing trees and shrubs, and opening gaps in the forest canopy. "Actions Common to All Action Alternatives" would establish a framework for clearing activities. Vistas would not be cleared to tree densities that are less than those prescribed in the FMP (NPS 2004b). The maximum size for viewing areas and feathering would be limited according to the value of the vista. Old growth trees would not be removed. Best management practices would be established regarding the use of mechanized equipment. Sites would be revegetated, and annual work plans would be posted for public viewing. Mitigation measures would be enacted to protect riparian corridors and soils.

Alternative 4 does not use a standard methodology to prioritize vistas for treatment. Without consistent criteria to determine which vistas are to be treated, the impacts on vegetation and other resources

would be less predictable. Additional limits on vegetation clearing in high-value vistas would be minimal. The standard clearing prescription would protect snags in medium-value vistas, unless removing them were deemed critical to establishment of the vista, and limit initial clearing activities to the foreground in low-value vistas.

Localized short-term adverse impacts could include trampling, soil compaction, and ground disturbance. In addition, there could be a localized decrease in the proportion of larger trees in areas where vistas have been cleared. However, old growth trees would not be removed, and trees would remain if they are older than the year in which the vista point was established. These actions would minimize decreases of larger trees at vista points.

Overall, under Alternative 4 there would be a long-term minor to moderate adverse impact on native vegetation in Yosemite. Sideboards that limit the size and density of vista clearing, and mitigation that would protect special-status plants and riparian plant communities, would reduce the impact to long-term minor and adverse. There would be short-term minor adverse impact on vegetation as trees and shrubs are cleared and revegetation activities take place.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting vegetation would be the same as under Alternative 1. Overall, local and regional present and foreseeable future actions would produce a long-term moderate beneficial effect on vegetation. Present and foreseeable future actions would contribute to reversing the major adverse impacts of past actions on vegetation in California. These effects, along with the long-term minor adverse impacts of Alternative 4, would result in long-term minor adverse impact on vegetation.

Impairment

Under Alternative 4, clearing and maintaining about 181 scenic vistas would have a long-term minor to moderate adverse impact on native vegetation in Yosemite. Sideboards that limit the size and density of vista clearing, and mitigation that would protect special-status plants and riparian plant communities, would reduce long-term minor and adverse impacts. There would be short-term minor adverse impacts on vegetation as trees and shrubs are cleared and revegetation activities take place. As impacts would be minor adverse, Alternative 4 would not impair vegetation resources for future generations.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

This alternative emphasizes flexibility in prioritizing vistas for management, and uses ecological conditions to determine the extent and intensity of vista clearing. A team of park professionals would prioritize vistas for management on an annual basis in the same manner as in Alternative 4. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for management. The ecological conditions at each vista site would determine the prescription for vegetation clearing in the same manner as in Alternative 3 (see Table II-8). About 167 vistas would be considered for initial treatment, continuing at a rate of about 30 each year.

The impacts of initial clearing could include removing trees and shrubs, and opening gaps in the forest canopy. “Actions Common to All Action Alternatives” would establish a framework for clearing-associated activities. Vistas would not be cleared to tree densities that are less than those prescribed in

the FMP (NPS 2004b). The maximum size for viewing areas and feathering would be limited according to the value of the vista. Old growth trees would not be removed. Best management practices would be established regarding the use of mechanized equipment. Sites would be revegetated, and annual work plans would be posted for public viewing. Mitigation measures would be enacted to protect riparian corridors and soils.

Under Alternative 5, most habitat components with particularly high value would remain, unless removing them were deemed critical to establishment of the vista. Most snags in subalpine communities would remain. Most large ponderosa pine and sugar pine snags in upper montane forest would remain. In lower montane and foothill zones, California black oak would be protected, unless removing it were deemed critical to establishment of the vista.

In medium-value vistas, no clearing would take place in the midground of subalpine forest vistas, and snags would be protected unless locally common. In the upper montane forest, no clearing would take place in the midground of a vista and underrepresented species (per the FMP) would be protected. California black oak would be protected in lower montane vistas, and sugar pine would remain unless locally common. In foothill zones, California black oak would be protected, unless removing it were deemed critical to establishment of the vista.

In low-value vistas, no initial clearing would take place. Maintenance actions would be acceptable in the foreground of lower and upper montane forest and subalpine or montane meadows. No red fir, Sierra juniper, sugar pine, broadleaved trees, or snags would be removed from low-value vistas.

Alternative 5 does not use a standard methodology to prioritize vistas for treatment. Without consistent criteria to determine which vistas are to be treated, the impacts on vegetation and other resources are less predictable. The “Actions Common to All Action Alternatives” provides sideboards that limit the size and density of clearing activities and protect old growth trees. The specific clearing prescriptions under Alternative 5 would increase protection for habitat components of particular biological importance.

Localized short-term adverse impacts could include trampling, soil compaction, and ground disturbance. In addition, there could be a localized decrease in the proportion of larger trees in areas where vistas have been cleared. However, old growth trees would not be removed, and trees would remain if they are older than the year in which the vista point was established. These actions would minimize decreases of larger trees.

Alternative 5 would place sideboards on the size and density of vista clearing, and protect specific habitat components of particular biological importance. About 167 scenic vistas would be considered for treatment, without a standardized method to prioritize vistas for treatment. Without consistent criteria to determine which vistas are to be treated, the impacts on vegetation and other resources would be less predictable. There would be short-term minor adverse impact on vegetation as trees and shrubs are cleared and revegetation activities take place. Mitigation measures would protect special-status plants and riparian plant communities. Overall, there would be a long-term minor adverse impact on native vegetation in Yosemite.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting vegetation would be the same as under Alternative 1. Overall, local and regional present and foreseeable future actions would produce a long-term moderate beneficial effect on vegetation. Present and foreseeable future actions would contribute to reversing the major adverse impacts of past actions on vegetation in California. These effects, along with the long-term minor adverse impacts of Alternative 5, would result in a long-term minor adverse impact on vegetation.

Impairment

Alternative 5 would place sideboards on the size and density of vista clearing, and protect specific habitat components of particular biological importance. Mitigation measures would protect special-status plants and riparian plant communities. Clearing and maintaining these scenic vistas would have a long-term minor adverse impact on native vegetation in Yosemite. As impacts would be minor and adverse, Alternative 5 would not impair vegetation resources for future generations.

SPECIAL-STATUS VEGETATION

Affected Environment

Special-status plants in Yosemite reflect the complex geologic substrate, diverse topography, and wide elevation range found in the park. The diverse flora of Yosemite includes about 150 special-status taxa (including vascular plant species, subspecies, and varieties).

The Sierra Nevada has an unusually high number of endemic plant species, plants that are restricted to a particular locality where they evolved. There are two types of endemic species: paleo-endemics and neo-endemics. Paleo-endemics were left from ancient climates before the Sierra Nevada uplift occurred, originating in a different landscape. Neo-endemics appeared after the glaciers from the last ice age receded. Specialized habitat within the Sierra Nevada, such as sulphur springs and alpine zones, gave rise to many neo-endemic species. Paleo-endemic species exist throughout Yosemite's vegetation zones. Many of them are rare within the park and are given special protection.

Special-status plants in Yosemite include those listed under the federal Endangered Species Act of 1973, as amended; the state Endangered Species Act; and sensitive plant species designated by park staff. No federally listed plants are documented within Yosemite National Park. Four plant species listed as Rare by the State of California are found in the El Portal Administrative Site. An additional 146 special-status species are designated as Park Sensitive. Special-status plants in Yosemite fall under one or more of the following categories:

- Federally Listed Threatened or Endangered (Endangered Species Act);
- California State listed Rare or endangered species;
- U.S. Forest Service Sensitive Species;
- Species listed on the California Native Plant Society Inventory of Rare and Endangered Plants;
- U.S. Fish and Wildlife Service Species of Concern or Species of Local Concern;
- Species with a limited distribution in Yosemite National Park and California;
- Sierra Nevada endemic species;
- Species on the U.S. Forest Service Watch List;
- Species with a wide distribution in California and a very limited distribution in Yosemite National Park;
- Species endemic to the park or local vicinity;
- Species at the extreme extent of their range;
- Species of special importance to the park (identified in legislation or park management objectives);

- Species whose status is of political concern or of unusual public interest;
- Species vulnerable to local population declines or collecting pressure; and/or
- Species subject to human disturbance during critical portions of their life cycles.

No federally listed rare plants are documented within Yosemite National Park or the El Portal Administrative Site. There are six federal Species of Concern documented in Yosemite National Park. Five of these occur in the project area: Sierra false coolwort (*Bolandra californica),* mountain lady's slipper (*Cypripedium montanum),* stream orchid (*Epipactis gigantea),* short-leaved hulsea (*Hulsea brevifolia),* and Torrey's popcorn flower (*Plagiobothrys torreyi* var. *torreyi)*. A "species of concern" is not listed as threatened or endangered, but is "a species that might be in need of conservation action." This need could range from periodic monitoring of the species and its threats to having the species listed as threatened or endangered. Designation as a species of concern does not provide legal protection; nor does it indicate that the species will eventually be listed (USFWS 2004).

Four California State-listed Rare Plants are found within Yosemite National Park or the El Portal Administrative Site: Yosemite onion (*Allium yosemitense*), Tompkin's sedge (*Carex tompkinsii*), Congdon's woolly-sunflower (*Eriophyllum congdonii*), and Congdon's lewisia (*Lewisia congdonii*). These plants were designated prior to the California State Endangered Species Act and the Native Plant Protection Act. None of these California State Rare plants are found in the project area.

A total of 15 Sensitive species (designated by NPS staff) live within the project area of this plan (13,047 acres) (Table III-3).

Table III-3. Special-status plants in the Scenic Vista Management Plan project area

Common Name *Scientific Name*	Vegetation Zone[a]	Vegetation Type	Habitat	Status[b]
Sierra false coolwort *Bolandra californica*	LM	Ponderosa pine-mixed conifer, California black oak	Snow or spring-fed sites in rocky areas, wet cliffs, rock crevices, and occasionally damp sites in shaded forest.	Federal: Forest Service Watch List CNDDB: G3/S3 CNPS: List 4.3 Park: Sensitive
Buxbaum's sedge *Carex buxbaumii*	SM	Subalpine meadow	Bogs, fens, meadows, seeps, and marshes; <3300 m.	CNDDB: G5/S3.2 CNPS: List 4.2 Park: Sensitive
mountain lady's slipper *Cypripedium montanum*	LM	Ponderosa pine-mixed conifer, California black oak	Shaded or partially shaded sites in mixed conifer forest. Typically located within 50m of a stream or meadow, but not wetlands.	Federal: Forest Service Sensitive CNDDB: G4/S4.2 CNPS: List 4.2 Park: Sensitive
stream orchid *Epipactis gigantea*	LM	Ponderosa pine-mixed conifer	Seeps, wet meadows, streambanks; <2600 m.	Federal: USFWS Park: Sensitive
Short-leaved hulsea *Hulsea brevifolia*	LM, UM	Giant sequoia-Mixed conifer, red fir forest	Gaps in red fir forest where Duff is thin or nonexistent over sandy loam or gravelly soil. Commonly on steep, north-facing slopes.	Federal: USFWS Species of Concern, Forest Service Sensitive CNDDB: G3/S3.2 CNPS: 1B.2 Park: Sensitive

Table III-3. Special-status plants in the Scenic Vista Management Plan project area

Common Name *Scientific Name*	Vegetation Zone[a]	Vegetation Type	Habitat	Status[b]
false pimpernel *Lindernia dubia* var. *anagallidea*	LM	Montane meadow	Wet places and wet meadows; <1600 m.	Park: Sensitive
northern bugleweed *Lycopus uniflorus*	LM	Ponderosa pine-mixed conifer, California black oak	Cold bogs and floating sphagnum islands, mixed conifer zone; 1600-2000 m.	CNDDB: G5/S3.3 CNPS: List 4.3 Park: Sensitive
bishop's cap *Mitella pentandra*	LM	Ponderosa-mixed conifer, California black oak	Streambanks, wet meadows; 1500-2500 m.	Park: Sensitive
tansy-leaved phacelia *Phacelia tanacetifolia*	FW	California black oak	Sandy to gravelly slopes, open areas; <2000 m.	Park: Sensitive
Torrey's popcorn flower, Yosemite popcorn flower *Plagiobothrys torreyi* var. *torreyi*	LM	Montane meadow	Moist meadows, flats, and forest edges at approximately 1200 m elevation.	Federal: USFWS Species of Local Concern CNDDB: G2T2Q/S2.2 CNPS: List 1B.2 Park: Sensitive
Yosemite bog orchid *Platanthera yosemitensis*	UM	Montane meadow	Wet meadows at headwaters of creeks in steep terrain. In saturated or inundated areas, and meadow seeps.	CNDDB: G2, S2.2 CNPS: 1B.2 Park: Sensitive
Sierra startwort *Pseudostellaria sierrae*	LM	White fir/mixed-conifer	Meadows, dry understory of mixed oak or coniferous forests; 1400-2000 m.	CNDDB: G3G4 / S3S4 CNPS: 4.2 Park: Sensitive
marsh arrow grass *Triglochin palustris*	SA	Lodgepole pine	Wet meadows, wet flats, stream and lake margins; 2400-3700 m.	CNDDB: G5 / S2.3 CNPS: List 2.3 Park: Sensitive
narrowpetal wakerobin *Trillium*	LM	Ponderosa pine-mixed conifer	Montane coniferous forest, foothill woodland, chaparral, riparian woodland	Park: Sensitive
Whitneya *Whitneya dealbata*	UM	Red fir forest	Endemic to central and southern Sierra Nevada. Occurs in open forests, meadows, and on slopes between 1200-2400 m.	Park: Sensitive

[a] SA=Subalpine, SM=Subalpine Meadow, UM=Upper Montane, LM=Lower Montane, MM=Montane Meadow, FW=Foothills Woodland, R=Riparian.

[b] See Tables III-4 and III-5, ranking information below

Special-Status Plant Ranking Information

California Natural Diversity Database (CNDDB)

The California Natural Diversity Database lists rare and sensitive plant taxa. Nine species listed in the CNDDB database inhabit the potential project area (Table III-2). The CNDDB provides two rankings: a state ranking (S) and a global ranking (G), as shown in Tables III-4 below.

Table III-4. California Natural Diversity Database (CNDDB) special-status plant ranking system

Global Ranking (G)	
G1	Less than 6 viable elements occurrences (populations for species) OR less than 1,000 individuals OR less than 809.4 hectares (ha) (2,000 acres [ac]).
G2	6 to 20 element occurrences OR 809.4 to 4,047 ha (2,000 to 10,000 ac).
G3	21 to 100 element occurrences OR 3,000 to 10,000 individuals OR 4,047 to 20,235 ha (10,000 to 50,000 ac).
G4	Apparently secure; this rank is clearly lower than G3, but factors exist that cause some concern (i.e. there is some threat, or somewhat narrow habitat).
G5	Population or stand demonstrably secure to ineradicable due to being commonly found in the world.
GH	All sites are **historic**; the element has not been seen for at least 20 years, but suitable habitat still exists.
GX	All sites are **extirpated;** this element is extinct in the wild.
GXC	Extinct in the wild; exists in cultivation.
G1Q	The element is very rare, but there is a taxonomic question associated with it.
Subspecies Level Subspecies receive a **T-rank** attached to the G-rank. With the subspecies, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the subspecies or variety. For example: *Chorizanthe robusta* var. *hartwegii*. This plant is ranked G2T1. The G-rank refers to the whole species range (i.e., *Chorizanthe robusta*, whereas the T-rank refers only to the global condition of var. *hartwegii*.	
State Ranking (S)	
S1	Less than 6 element occurrences OR less than 1,000 individuals OR less than 809.4 ha (2,000 ac). S1.1 = very threatened S1.2 = threatened S1.3 = no current threats known
S2	6 to 20 element occurrences OR 3,000 individuals OR 809.4 to 4,047 ha (2,000 to 10,000 ac). S2.1 = very threatened S2.2 = threatened S2.3 = no current threats known..
S3	21 to 100 element occurrences OR 3,000 to 10,000 individuals OR 4,047 to 20,235 ha (10,000 to 50,000 ac). S3.1 = very threatened S3.2 = threatened S3.3 = no current threats known
S4	Apparently secure within California; this rank is clearly lower than S3 but factors exist to cause some concern (i.e., there is some threat, or somewhat narrow habitat). NO THREAT RANK.
S5	Demonstrably secure to ineradicable in California. NO THREAT RANK.
SH	All California sites are historic; the element has not been seen for at least 20 years, but suitable habitat still exists.
SX	All California sites are **extirpated;** this element is extinct in the wild.

California Native Plant Society (CNPS)

The California Native Plant Society lists rare and sensitive plants, some of which are known or suspected to live in the park. There are a total of ten CNPS-listed species that live in the potential project area (Table III-2). CNPS ranking definitions are given in Table III-5.

Table III-5. California Native Plant Society (CNPS) special-status plant ranking system

CNPS List	Definition
1A	Presumed Extinct in California
1B	Rare or Endangered in California and elsewhere
2	Rare and Endangered in California; more common elsewhere
3	Need more information
4	Plants of Limited Distribution

The CNPS Threat Rank designates the level of endangerment with a 1 to 3 ranking, 1 being the most endangered and 3 being the least endangered.

0.1-Seriously threatened in California (high degree/immediacy of threat)
0.2-Fairly threatened in California (moderate degree/immediacy of threat)
0.3-Not very threatened in California (low degree/immediacy of threats or no current threats known) (CNPS 2010).

Environmental Consequences

Methodology

This analysis considers the effects of the alternatives on special-status plant species and their habitats. Each special-status plant species was evaluated to determine its known or likely existence or preferred habitat in the vicinity of scenic vista management sites. The analysis also evaluates the potential for direct physical loss or fragmentation of special-status species habitat. Guidance for this section is outlined in the 1998 U.S. Fish and Wildlife Service and National Marine Fisheries Service's *Endangered Species Act Consultation Handbook: Procedures for Conducting Section 7 Consultations and Conference* (USFWS NMFS 1998). If listed species or their critical habitat are present, the federal agencies must determine whether the action will have "no effect," "may affect, not likely to adversely affect," or "may affect, likely to adversely affect" those species or their habitat status. Federal agencies must consult with the U.S. Fish and Wildlife Service (USFWS) to ensure their actions would not jeopardize the continued existence of any federally listed or proposed threatened or endangered species, or adversely modify designated or proposed critical habitat (ESA Section 7 (a) (2)).

No Effect: Scenic vista management activities would be located outside suitable habitat and there would be no disturbance or other direct, indirect, or cumulative impacts on the species. The action would not affect the listed species or its designated critical habitat (USFWS NMFS 1998).

May Affect, Not Likely to Adversely Affect: Scenic vista management activities would take place in suitable habitat or result in indirect impacts on the species, but given circumstances or mitigation conditions, the effect on the species is likely to be either beneficial, discountable, or insignificant. Insignificant effects "relate to the size of the impact and should never reach the

scale where take would occur." Discountable effects are "extremely unlikely to occur." Therefore, "based on best judgment, a person would not 1) be able to meaningfully measure, detect, or evaluate insignificant effects or 2) expect discountable effects to occur" (USFWS NMFS 1998, 3-12).

May Affect, Likely to Adversely Affect: Scenic vista management activities would not be discountable, insignificant, or beneficial, and would have an adverse effect on a listed species. Adverse effects could be the result of direct, indirect, interrelated, or interdependent actions. An adverse effect on a listed species may occur as a direct, indirect, or cumulative result of the proposed action or its interrelated or interdependent actions (USFWS NMFS 1998).

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. Maximum widths and depths for vista clearing would not be specified. Environmental compliance would take place on a case-by-case basis, and actions to protect special-status plants, and mitigation to protect special-status plants, would be applied to each vista under consideration. Vista clearing activity would be minimal, and the effect on special-status species is expected to be insignificant. Alternative 1 may affect, and is not likely to adversely affect, special-status plants.

Cumulative Impacts

Cumulative impacts on special-status plant species are based on analysis of past, present, and reasonably foreseeable future actions in California and the Yosemite region in conjunction with the potential effects of this alternative. Past impacts threaten special-status plant habitat throughout California, including urbanization and agricultural conversion, the alteration of natural processes that sustain plant habitat, and the introduction of nonnative plants and animals. Special-status plants are often dependent on specialized habitats that are fragmented, degraded, or completely eliminated (CNPS 2001). The overall loss of native plant and special-status plant habitat in California has been adverse long-term major.

Parkwide planning efforts such as the Merced and Tuolumne Wild and Scenic comprehensive management plans and the *Invasive Plant Management Plan* would provide large-scale watershed protection for plant habitat. Prescribed fire and managed wildland fire activities would greatly reduce the threat of large high-severity catastrophic fires, and would reduce the potential for vegetation type conversion. Smaller-scale restoration actions would restore native plant habitat that could sustain special-status species. Upcoming projects such as the Henness Ridge Environmental Education Campus, the Tioga Trailheads Project, and the Glacier Point, Tioga, and Wawona roads rehabilitation projects are not expected to adversely affect special-status plants, as mitigation is included to protect special-status plants. The combined actions of California State and local programs to control invasive plant species would have a long-term beneficial impact on special-status plant species. Present and future regional actions would have localized long-term moderate beneficial impacts on special-status plant habitat.

Past impacts on special-status plants have been adverse, long-term, and major. Present and foreseeable future actions would contribute to reversing the major adverse impacts of past actions on special-status plants, and would produce long-term minor beneficial effects on special-status plants. These past,

present, and future cumulative effects, along with the localized long-term minor beneficial impacts of Alternative 1, would result in long-term adverse minor impacts on vegetation.

Impairment

The NPS would continue to restore scenic vistas at a rate of about three per decade. Vista clearing activity would continue to be minimal, and the effect on special-status species is expected to be insignificant. Therefore, Alternative 1 may affect, and is not likely to adversely affect, special-status plants. Because long-term impacts on special-status plants associated with Alternative 1 would be insignificant, Alternative 1 would not impair the park's special-status plant resources for future generations.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment. The impacts of initial clearing would include tree and shrub removal. "Actions Common to All Action Alternatives" would set size limits for viewing areas and tree densities.

As stated in the mitigation measures, a botanist would work with vista management staff to ensure protection of special-status plants. If necessary, site surveys for special-status plants would be conducted prior to the commencement of vista management activities, and a rare-plant monitor would oversee clearing activities to ensure protection of special-status plants. Resource managers would review annual work plans prior to implementation. If potential impacts on special-status plants could not be mitigated, including impacts on the habitat that sustains the special-status plants, the proposed work site would be eliminated from consideration. With mitigation, adverse impacts on special-status plant individuals and populations would be insignificant. Therefore, Alternative 2 may affect, and is not likely to adversely affect, special-status plants.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions affecting special-status vegetation would be the same as in Alternative 1. Past impacts on special-status plants have been adverse long-term major. Present and foreseeable future actions would contribute to reversing the major adverse impacts of past actions on special-status plants, and would produce long-term minor beneficial effects on special-status plants. These past, present, and future cumulative effects, along with the insignificant effects of Alternative 2, may affect, and are not likely to adversely affect, special-status plants in the project area.

Impairment

Under Alternative 2, mitigation measures to protect special-status species would be in place during vista management activities. If adverse impacts on special-status plants could not be mitigated, the site would be removed from consideration. The effect on special-status species is expected to be insignificant, and Alternative 2 may affect, and is not likely to adversely affect, special-status plants. Because long-term impacts on special-status plants associated with Alternative 2 would be insignificant, Alternative 2 would not impair the park's special-status plant resources for future generations.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas.

As stated in the mitigation measures, a botanist would work with vista management staff to ensure protection of special-status plants. If necessary, site surveys for special-status plants would be conducted prior to the commencement of vista management activities, and a rare-plant monitor would oversee clearing activities to ensure protection of rare plants. Resource managers would review annual work plans prior to implementation. If potential impacts on special-status plants could not be mitigated, including impacts on the habitat that sustains the special-status plants, the proposed work site would be eliminated from consideration. With mitigation, adverse impacts on special-status plant individuals and populations would be insignificant. Therefore, Alternative 3 may affect, and is not likely to adversely affect, special-status plants.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions affecting special-status vegetation would be the same as in Alternative 1. Past impacts on special-status plants have been adverse long-term major. Present and foreseeable future actions would contribute to reversing the major adverse impacts of past actions on special-status plants, and would produce long-term minor beneficial effects on special-status plants. These past, present, and future cumulative effects, along with the insignificant effects of Alternative 3, may affect, and are not likely to adversely affect, special-status plants in the project area.

Impairment

Mitigation measures to protect special-status species would be in place. If adverse impacts on special-status plants could not be mitigated, the site would be removed from consideration. The effect of Alternative 3 on special-status plant species is expected to be insignificant. Therefore, Alternative 3 may affect, and is not likely to adversely affect, special-status plants. Because long-term impacts on special-status plants associated with Alternative 3 would be insignificant, Alternative 3 would not impair the park's special-status plant resources for future generations.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

This alternative is the most flexible in terms of prioritizing and managing vistas. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for treatment on an annual basis. Once sites were prioritized for treatment, park staff would apply a standardized clearing prescription as in Alternative 2 (Table 2-X). About 181 vistas would be considered for initial treatment, continuing at a rate of about 30 each year.

As stated in the mitigation measures, a botanist would work with vista management staff to ensure protection of special-status plants. If necessary, site surveys for special-status plants would be

conducted prior to the commencement of vista management activities, and a rare-plant monitor would oversee clearing activities to ensure protection of rare plants. Resource managers would review annual work plans prior to implementation. If potential impacts on special-status plants could not be mitigated, including impacts on the habitat that sustains the special-status plants, the proposed work site would be eliminated from consideration. With mitigation, adverse impacts on special-status plant individuals and populations would be insignificant. Therefore, Alternative 4 may affect, and is not likely to adversely affect, special-status plants.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions affecting special-status vegetation would be the same as in Alternative 1. Past impacts on special-status plants have been adverse long-term major. Present and foreseeable future actions would contribute to reversing the major adverse impacts of past actions on special-status plants, and would produce long-term minor beneficial effects on special-status plants. These past, present, and future cumulative effects, along with the insignificant effects of Alternative 4, may affect, and are not likely to adversely affect, special-status plants in the project area.

Impairment

Under Alternative 4, mitigation measures to protect special-status species would be in place. If adverse impacts on special-status plants could not be mitigated, the site would be removed from consideration. The effect of Alternative 4 on special-status species is expected to be insignificant. Therefore, Alternative 4 may affect, and is not likely to adversely affect, special-status plants. Because long-term impacts on special-status plants associated with Alternative 4 would be insignificant, Alternative 4 would not impair the park's special-status plant resources for future generations.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

This alternative emphasizes flexibility in terms of prioritizing vistas for management, and uses ecological conditions for determining the extent and intensity of vista clearing. A team of park professionals would prioritize vistas for management on an annual basis in the same manner as in Alternative 4. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for management. The ecological conditions at each vista site would determine the prescription for vegetation clearing in the same manner as in Alternative 3 (see Table II-8). About 167 vistas would be considered for initial treatment, continuing at a rate of about 30 each year.

As stated in the mitigation measures, a botanist would work with vista management staff to ensure protection of special-status plants. If necessary, site surveys for special-status plants would be conducted prior to the commencement of vista management activities, and a rare-plant monitor would oversee clearing activities to ensure protection of rare plants. Resource managers would review annual work plans prior to implementation. If potential impacts on special-status plants could not be mitigated, including impacts on the habitat that sustains the special-status plants, the proposed work site would be eliminated from consideration. With mitigation, adverse impacts on special-status plant individuals and populations would be insignificant. Therefore, Alternative 5 may affect, and is not likely to adversely affect, special-status plants.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions affecting special-status vegetation would be the same as in Alternative 1. Past impacts on special-status plants have been adverse long-term major. Present and foreseeable future actions would contribute to reversing the major adverse impacts of past actions on special-status plants, and would produce long-term minor beneficial effects on special-status plants. These past, present, and future cumulative effects, along with the insignificant effects of Alternative 5, may affect, and are not likely to adversely affect, special-status plants in the project area.

Impairment

Under Alternative 5, mitigation measures to protect special-status species would be in place. If adverse impacts on special-status plants could not be mitigated, the site would be removed from consideration. The effect of Alternative 5 on special-status species is expected to be insignificant. Therefore, Alternative 5 may affect, and is not likely to adversely affect, special-status plants. Because long-term impacts on special-status plants associated with Alternative 5 would be insignificant, Alternative 5 would not impair the park's special-status plant resources for future generations.

WILDLIFE

Affected Environment

Wildlife in Yosemite National Park is diverse and abundant, reflecting a wide range of Sierra Nevada habitats as seen in the five vegetation zones of the park (see Vegetation section): foothill woodland, lower montane forest, upper montane forest, subalpine forest, and alpine.

The foothill woodland habitat (approximately 2,000 to 3,000 ft elevation) is typical of El Portal and the lower Tuolumne River watershed. Representative species include northern alligator lizard, red-tailed hawk, Anna's hummingbird, western scrub-jay, wrentit, big brown bat, California ground squirrel, deer mouse, brush mouse, coyote, and spotted skunk.

The lower montane forest habitat (approximately 3,000 to 5,000 ft elevation) is typical of Yosemite Valley and Wawona. Representative vegetation types include mixed-conifer forest, California black oak, and ponderosa pine; representative wildlife includes western fence lizard, western rattlesnake, Pacific chorus frog, acorn woodpecker, yellow warbler, western wood-pewee, striped skunk, mule deer, black bear, and gray fox.

The upper montane forest habitat (approximately 5,000 to 8,000 ft elevation) is typical of areas along the Glacier Point Road and Crane Flat and is dominated by red fir, white fir, Jeffrey pine, and sugar pine. Representative wildlife species include western terrestrial garter snake, great gray owl, golden eagle, olive-sided flycatcher, red-breasted sapsucker, sooty grouse, mountain chickadee, coyote, short-tailed weasel, fisher, and bushy-tailed woodrat.

Subalpine forest habitat (approximately 8,000 to 10,000 ft elevation) is typical of Tuolumne Meadows and includes lodgepole pine forest and whitebark pine/mountain hemlock forest. Representative

species are Yosemite toad, Clark's nutcracker, dusky flycatcher, Williamson's sapsucker, pine siskin, yellow-bellied marmot, and golden-mantled ground squirrel.

The alpine habitat (over 10,000 ft elevation) is dominated by talus, rock outcrops, and rock slabs, and is characteristic of the highest elevation peaks in the park. Representative wildlife species include Sierra Nevada yellow-legged frog, prairie falcon, gray-crowned rosy-finch, horned lark, Belding's ground squirrel, pika, and Sierra Nevada big-horned sheep.

Meadows and riparian areas can be found at almost all elevations within Yosemite National Park and are highly productive, structurally diverse habitats that support a high level of species diversity and provide important links between terrestrial and aquatic communities. Meadow habitats within the park, such as fresh emergent wetland and wet meadow, support the breeding of western toad and Pacific chorus frog, maintain nesting habitat for water birds, and provide green vegetation in summer for herbivores such as mule deer (NPS 2000a). Riparian vegetation along river channels provides continuous corridors for movement of large mammals, such as mule deer and black bear.

More than a third of wildlife species depend on dead and dying wood for their survival and well-being. Snags provide important habitat for forest wildlife, as well as a source of coarse woody debris important in forest succession. Snags are important as nesting habitat to many cavity-nesting birds and mammals. Cavity excavators (e.g., woodpeckers) create holes in dead wood for nest and den sites, and those called secondary cavity nesters, such as bluebirds, flying squirrels, and owls, use the excavated holes as nests and dens. Several species of birds (e.g., brown creepers) and mammals (e.g., bats) nest or roost behind loose bark on those snags that have not yet decayed to the point that the bark is gone. Some birds, such as Vaux's swifts, and small and large mammals alike, from northern flying squirrel and American marten to black bear, use large hollow snags for nesting, roosting, and denning. Some raptors (e.g., hawks and owls) build nests in the broken top snags or uppermost large branches.

Snags also function as a food source for many birds that glean insects and other invertebrates from decaying wood and bark. Coarse woody debris includes fallen trees and large branches as well as logs and large pieces of wood left from hazard tree removal operations. This habitat component serves many of the same purposes as snags; it is used for nesting, denning, roosting, foraging, protection from predators, and shelter from inclement weather. At least as many vertebrate species use coarse woody debris as use snags. For example, salamanders forage for invertebrates and seek cover in rotting logs. Coarse woody debris is also host to a huge number of insects and noninsect invertebrates.

Collectively, the park's habitats support about 9 species of amphibians, 20 species of reptiles, 165 species of birds, and 81 species of mammals.

Amphibians and Reptiles

Compared with most mountain regions of the western United States, Yosemite has a large number of native amphibian and reptile species: 2 toads, 1 chorus frog, 1 true frog, 5 newts and salamanders, 12 snakes (one poisonous), 7 lizards, and 1 turtle. As in the rest of the Sierra Nevada, amphibians in Yosemite have suffered population declines (Drost and Fellers 1993). At higher elevations, Sierra Nevada yellow-legged frog and Yosemite toad are still present; however, they are severely reduced in population size and range. Possible causes of decline in Sierra Nevada amphibians include habitat destruction, the presence of nonnative fish and frogs, pesticides, and diseases. Two species of true frogs once found in Yosemite are now apparently extirpated: foothill yellow-legged frog and California red-legged frog. Possible factors in their disappearance include a reduction in perennial ponds and wetlands, and predation by nonnative bullfrogs.

Birds

Yosemite's wide range of elevations and habitats supports about 165 species of birds, including 129 species that breed in the park. Many bird species occupy forest habitat with large-diameter snags, which are important habitat features for many species of owls, woodpeckers, chickadees, and nuthatches. Acorn woodpecker and band-tailed pigeon depend on abundant acorn crops produced by oak trees. Mountain quail, dusky flycatcher, and hermit thrush favor shrub habitat within woodlands. Neotropical migrant birds, such as warblers, vireos, and flycatchers, are often associated with meadow or riparian vegetation communities.

In recognition of Yosemite's bird diversity and critical breeding, stopover, and wintering habitats, the park has been designated by the American Bird Conservancy as a Globally Important Bird Area. Despite this distinction, Breeding Bird Survey data suggest long-term declines in an alarming number of passerines that can be found in the park, including American robin, orange-crowned warbler, Nashville warbler, yellow warbler, Wilson's warbler, chipping sparrow, and white-crowned sparrow (Siegel and DeSante 1999).

Anthropogenic climate change on a world scale and habitat degradation on a regional scale likely affect the viability of bird populations in relatively intact habitats managed in the park. Pesticide drift from the Central Valley, altered fire regimes, invasive species, aircraft overflights, and direct human noise disturbance in the park may contribute to local bird population declines.

Mammals

Approximately 81 species of mammals inhabit Yosemite. Of the insectivore family, five shrews and one mole have been documented in the park. Seventeen species of bats inhabit the forests and cliffs of Yosemite, including 12 special-status species. Many of these bat species depend on riparian and meadow habitats for foraging, and on large trees or snags for roosting. Seventeen carnivores inhabit the park, including black bear, bobcat, coyote, raccoon, gray fox, mountain lion, ringtail, and several weasel species. Six species of squirrels, six species of chipmunks, nine species of mice, and other species of rodents, including woodrats, voles, and pocket gophers, inhabit the park and El Portal. Yosemite's largest mammal, the grizzly bear, was extirpated from the region and from the state in the 1920s. There are two native species of hoofed mammals: the Sierra Nevada bighorn sheep, and mule deer. Other mammal species that inhabit the park but are rarely seen are the fisher and the Sierra Nevada red fox.

Nonnative Wildlife Species

Nonnative wildlife in Yosemite National Park includes white-tailed ptarmigan, wild turkey, brown-headed cowbird, European starling, house sparrow, bullfrog, and nonnative trout.

Bullfrogs currently occupy standing and slow-moving water throughout the Yosemite Valley. Bullfrogs prey on a wide variety of animals, including insects, fish, other amphibians, birds, reptiles, and small mammals.

Brown-headed cowbird populations in the Sierra Nevada have increased (Verner and Ritter 1983) and now threaten native bird species. Cowbirds lay their eggs in the nests of other birds, usually songbirds. This nest parasitism can have a devastating effect on the populations of some native songbird species. Brown-headed cowbirds can be found in large numbers in the park's stables, corrals, campgrounds, and residential areas.

Wild turkeys were introduced widely in California by state authorities, and have moved into the park along its western boundary. The impact of this species on park ecosystems is unknown, but likely includes predation of small animals, competition with native species for food, destruction of native

plants, and reduction of their seeding rates (especially in oaks), soil and forest litter disturbance, and support of unnaturally high predator populations.

White-tailed ptarmigan were introduced as a game species to high elevation areas east of Yosemite, and they have become widespread in the park's alpine habitats. The impact of ptarmigan has not been determined, but their herbivory likely affects native plants that have a very low rate of growth and productivity.

The European starling and house sparrow are two nonnative species found in El Portal that affect native bird species through competition for nest cavities, a limited resource. Both species are known to aggressively evict native bird species from occupied cavities. The existing development in El Portal has likely increased the abundance of both species by providing additional nesting sites and food sources.

Environmental Consequences

Methodology

Wildlife analysis is based on a qualitative assessment of wildlife that could be affected in the project area and the effects anticipated as a result of management activities and subsequent ongoing maintenance. Scenic vista management would affect wildlife by removing trees, snags, shrubs, and ground cover, which are key components of wildlife habitat, serving as food, shelter, and cover. Direct effects on wildlife could result if management activities disturb or disrupt wildlife during vulnerable periods of their life cycles, e.g., hibernating bats during the winter or nesting birds during the spring and summer.

Type of Impact: This analysis identifies potential impacts as either beneficial or adverse. Direct adverse impacts include those that directly remove, relocate, affect, or cause the increased disturbance of wildlife. Indirect adverse impacts include those that remove, relocate, affect, or cause the increased disturbance of wildlife habitat. Beneficial impacts result from restoration of wildlife habitat (size, continuity, and integrity). Noise impacts can adversely affect wildlife foraging, mating, and nesting behavior. Management activities can also directly interfere with normal animal movement patterns.

Duration of Impact: The duration of an impact is the time required for wildlife to recover after treatment. Short-term impacts are those that would last up to five years following the implementation of an alternative, taking into account the lifespan, generation time, and reproductive capacity among taxa. Small mammals would rebound quickly, whereas black bears would recover slowly. Long-term impacts would last longer than five years after the implementation of an alternative.

Intensity of Impact: Negligible impacts on wildlife are those that would cause no measurable or perceptible changes to native wildlife and wildlife habitat, by way of removal, relocation, effect, or increased disturbance. Minor impacts would be measurable or perceptible effects on wildlife and wildlife habitat, and would be localized within an isolated area in which impacts could be reversed. Moderate impacts would be likewise be measurable and perceptible effects on wildlife and wildlife habitat, and impacts would remain localized and potentially reversible. Major impacts would be substantial and highly noticeable, and could be permanent in their effects on wildlife and wildlife habitat, including changes to the size, diversity, or integrity of wildlife populations and habitats.

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments.

Standardized mitigations to protect vegetation would not apply to vista clearing activities. Maximum widths and depths for vista clearing would not be specified.

Impacts on wildlife and wildlife habitat could include a slight loss of trees and understory, and a slight increase in the availability of human food, trash, noise, and visual disturbance in localized areas. Under Alternative 1, vista clearing activity would continue to be minimal; therefore there would be a long-term, negligible adverse impact on wildlife within the project area.

Cumulative Impacts

Cumulative impacts on wildlife are based on analysis of past, present, and reasonably foreseeable future actions in California and the Yosemite region in conjunction with the potential effects of this alternative. Past and present effects on wildlife include fire suppression and its effect on wildlife habitat, the deposition of chemical compounds from outside the park, the presence of nonnative species (including pathogens), and land management practices outside Yosemite. Some wildlife species introduced into Yosemite include brown trout, brown-headed cowbird, European starling, house sparrow, and bullfrog (NPS 2000a).

In California, massive habitat fragmentation and draining of wetlands have impacted migratory bird species, and have increased the relative importance of the remaining unspoiled habitat. Market hunting and disease have decimated the populations of many large ungulates, including Sierra Nevada Bighorn sheep. Air pollution, increased ultraviolet radiation, and global climate changes are postulated to be contributors to large amphibian declines (although chytrid fungus and nonnative fish may have caused the greatest level of harm). Pesticides, particularly insecticides, have decreased insect populations and caused adverse impacts on bats and other species that depend on insects for food. In the foreseeable future, climate change has the potential for large-scale major adverse impacts on wildlife. Climate change could accelerate the arrival and spread of nonnative plant species by making higher elevations of the park more suitable for these species through warming. These past, present, and foreseeable future impacts are long-term adverse major.

Local past and present actions would have both beneficial and adverse impacts on wildlife. Parkwide planning efforts such as the Merced and Tuolumne Wild and Scenic comprehensive management plans and the *High Elevation Aquatic Ecosystem Recovery and Stewardship Plan* would provide large-scale watershed protection to wildlife habitat. Prescribed fire and managed wildland fire activities would greatly reduce the threat of large high-severity catastrophic fires, and would reduce the potential for habitat conversion. Some actions such as the Henness Ridge Environmental Education Campus could reduce available wildlife habitat in the park, though this action has mitigations to protect specific species at risk. Road rehabilitation projects such as those involving the Glacier Point Road, Wawona Road, and Tioga Road produce short-term construction-related impacts such as roadside vegetation disturbance and loss of potential nesting and roosting trees. High visitor use along road corridors, along with associated noise and disturbance, reduces the value of roadside habitat. Automobile and wildlife collisions along road corridors account for a significant number of wildlife mortalities in Yosemite, including Pacific fisher, bear, and deer.

Past impacts on wildlife have been adverse long-term major. Local present actions would contribute to reversing the major adverse impacts of past actions on wildlife. In the context of the multiple, spatially massive, and potentially catastrophic past and present effects, the impacts of Alternative 1 would be negligible. The past, present, and future effects, along with impacts of Alternative 1, would result in long-term adverse moderate impacts on wildlife.

Impairment

Vista clearing activity would be minimal and impacts on wildlife would be long-term adverse negligible. Alternative 1 would not impair the park's wildlife for future generations.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment.

The impacts of initial clearing could include removing trees and shrubs, and creating new gaps in the forest canopy. "Actions Common to All Action Alternatives" would establish a framework for clearing activities. Vistas would not be cleared to tree densities that are less than those prescribed in the FMP (NPS 2004b). The maximum size for viewing areas and feathering would be limited. Old growth trees would not be removed. Best management practices would be established regarding the use of mechanized equipment. Sites would be revegetated, and annual work plans would be posted for public viewing. Mitigation measures would be enacted to protect special-status species, birds, bats, the Pacific fisher, and important habitat components, such as snags and basal hollows in trees.

Under Alternative 2, there would be few additional limits on vegetation clearing in high-value vistas. The standard clearing prescription would protect snags in medium-value vistas, unless removing them were deemed critical to establishment of the vista, and limit initial clearing activities to the foreground in low-value vistas. Localized short-term adverse impacts could include trampling, soil compaction, and ground disturbance.

There is likely to be a localized decrease in the proportion of larger trees in areas where vistas have been cleared. However, old growth trees would not be removed, and trees would remain if they are older than the year in which the vista point was established. These actions could minimize the potential decrease of larger trees at vista points. Over time, loss of large trees and associated canopy and increase in understory vegetation could improve wildlife habitat and forage for some wildlife species, such as squirrels, while degrading wildlife habitat for more specialist species, such as cavity-nesting birds and roosting bats.

Specific species in the park that may be adversely affected by vista management activities, due to alteration, reduction, or habitat removal, include northern flying squirrel, big brown bat, Trowbridge shrew (George 1989), and American black bear. Removal of key habitat features (e.g., snags, large diameter trees and logs, oak trees and decaying wood) could displace wildlife species and remove roosting, nesting, or hibernating habitat. There could be a beneficial impact on species such as mule deer, spotted towhee or golden-mantled ground squirrel as a result of postclearing regeneration of brushy or herbaceous vegetation. Review of annual work plans would limit permanent displacement of wildlife species and loss of key roosting, nesting, or hibernating habitat.

Localized short-term moderate adverse impacts could occur if vista clearing resulted in temporary displacement of wildlife species and loss of roosting, nesting, or hibernating habitat. Removal of key habitat features, such as snags, large diameter trees and logs, oak trees, and decaying wood in localized areas, could cause short-term habitat loss. Measurable and perceptible changes in wildlife populations within an isolated area are expected to last up to five years following vista clearing.

Under Alternative 2, sideboards on the size and density of vista clearing would limit clearing activities. There would be no comprehensive measures to protect specific habitat elements (as in alternatives 3

and 5). There would be a short-term minor adverse impact on wildlife as trees and shrubs are cleared and revegetation activities take place. Overall, there would be a long-term minor adverse impact on wildlife in Yosemite.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting wildlife would be the same as those under Alternative 1. Past impacts on wildlife have been adverse long-term major. Local present actions would contribute to reversing the major adverse impacts of past actions on wildlife. In the context of the multiple, spatially massive, and potentially catastrophic past and present effects, the impacts of Alternative 1 would be negligible. The past, present, and future effects, along with impacts of Alternative 2, would result in long-term adverse moderate impacts on wildlife.

Impairment

Under Alternative 2, sideboards on the size and density of vista clearing would limit clearing activities. There would be no comprehensive measures to protect specific habitat elements (as in alternatives 3 and 5). As impacts would be minor and adverse, Alternative 2 would not impair vegetation resources for future generations. Because impacts on wildlife associated with Alternative 2 would be long-term minor adverse, Alternative 2 would not impair the park's wildlife for future generations.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas.

The impacts of initial clearing could include removing trees and shrubs, and creating new gaps in the forest canopy. "Actions Common to All Action Alternatives" would establish a framework for clearing activities. Vistas would not be cleared to tree densities that are less than those prescribed in the FMP (NPS 2004b). The maximum size for viewing areas and feathering would be limited. Old growth trees would not be removed. Best management practices would be established regarding the use of mechanized equipment. Sites would be revegetated, and annual work plans would be posted for public viewing. Mitigation measures would be enacted to protect special-status species, birds, bats, the Pacific fisher, and important habitat components, such as snags and basal hollows in trees.

Under Alternative 3, most habitat components with particularly high value would remain, unless removing them were deemed critical to establishment of the vista. Most snags in subalpine communities would remain. Most large ponderosa pine and sugar pine snags in upper montane forest would remain. In lower montane and foothill zones, California black oak would be protected unless removing it were deemed critical to establishment of the vista.

In medium-value vistas, no clearing would take place in the midground of subalpine forest vistas, and snags would be protected unless locally common. In the upper montane forest, no clearing would take place in the midground of a vista and underrepresented species (per the FMP) would be protected. California black oak would be protected in lower montane vistas, and sugar pine would remain unless

locally common. In foothill zones, California black oak would be protected unless removing it were deemed critical to establishment of the vista.

In low-value vistas, no initial clearing would take place. Maintenance actions would be acceptable in the foreground of lower and upper montane forest and subalpine or montane meadows. No red fir, Sierra juniper, sugar pine, broadleaved trees, or snags would be removed from low-value vistas.

There could be a localized decrease in the proportion of larger trees in areas where vistas have been cleared. However, old growth trees would not be removed, and trees would remain if they are older than the year in which the vista point was established. These actions would minimize decreases of larger trees. Over time, loss of large trees and associated canopy and increase in understory vegetation could improve wildlife habitat and forage for some wildlife species, such as squirrels, while degrading wildlife habitat for more specialist species, such as cavity-nesting birds and roosting bats.

Specific species in the park that may be adversely affected by vista management activities, due to alteration, reduction, or removal of their habitat, include northern flying squirrel, big brown bat, Trowbridge shrew (George 1989), and American black bear. There could be a beneficial impact on species such as mule deer, spotted towhee, or golden-mantled ground squirrel as a result of postclearing regeneration of brushy or herbaceous vegetation. Review of annual work plans would limit permanent displacement of wildlife species and loss of key roosting, nesting, or hibernating habitat.

Localized short-term moderate adverse impacts could include temporary displacement of wildlife species and loss of roosting, nesting, or hibernating habitat. Removal of key habitat features, such as snags, large diameter trees and logs, oak trees, and decaying wood in localized areas, could cause short-term habitat loss. Measurable and perceptible changes in wildlife populations within an isolated area are expected to last up to five years following vista clearing.

Under Alternative 3, there would be sideboards on the size and density of vista clearing. Specific habitat elements would be protected. There would be a short-term minor adverse impact on wildlife as trees and shrubs are cleared and revegetation activities take place. Mitigation measures would protect special-status wildlife. Overall, there would be a long-term minor adverse impact on wildlife in Yosemite.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting wildlife would be the same as under Alternative 1. Past impacts on wildlife have been adverse, long-term, and major. Local present actions would contribute to reversing the major adverse impacts of past actions on wildlife. In the context of the multiple, spatially massive, and potentially catastrophic past and present effects, the impacts of Alternative 1 would be negligible. The past, present, and future effects, along with impacts of Alternative 3, would result in long-term adverse moderate impacts on wildlife.

Impairment

Under Alternative 3, there would be sideboards on the size and density of vista clearing and protection for specified habitat elements of particular value. Alternative 3 would have long-term minor adverse impacts on wildlife in the park. As impacts on wildlife associated with Alternative 3 would be long-term minor adverse, Alternative 3 would not impair the park's wildlife for future generations.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

This alternative is the most flexible in prioritizing and managing vistas. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for treatment on an annual basis. Once vistas were prioritized for treatment, park staff would apply a standardized clearing prescription as in Alternative 2 (Table II-8). About 181 vistas would be considered for initial treatment, continuing at a rate of about 30 each year.

The impacts of initial clearing could include removing trees and shrubs, and opening gaps in the forest canopy. "Actions Common to All Action Alternatives" would establish a framework for clearing activities. Vistas would not be cleared to tree densities that are less than those prescribed in the FMP (NPS 2004b). The maximum size for viewing areas and feathering would be limited according to the value of the vista. Old growth trees would not be removed. Best management practices would be established regarding the use of mechanized equipment. Sites would be revegetated, and annual work plans would be posted for public viewing. Mitigation measures would be enacted to protect special-status species, birds, bats, the Pacific fisher, and important habitat components, such as snags and basal hollows in trees.

Alternative 4 does not use a standard methodology to prioritize vistas for treatment. Without consistent criteria to determine which vistas are to be treated, the impacts on wildlife would be less predictable. Additional limits on vegetation clearing in high-value vistas would be minimal. The standard clearing prescription would protect snags in medium-value vistas (unless critical to establishment of the vista) and limit initial clearing activities to the foreground in low-value vistas.

Specific species in the park that may be adversely affected by vista management activities, due to alteration, reduction, or removal of their habitat, include northern flying squirrel, big brown bat, Trowbridge shrew (George 1989), and American black bear. Removal of key habitat features (snags, large diameter trees and logs, oak trees and decaying wood) could displace wildlife species and remove key roosting, nesting, or hibernating habitat. There could be a beneficial impact on species such as mule deer, spotted towhee, or golden-mantled ground squirrel as a result of postclearing regeneration of brushy or herbaceous vegetation. Review of annual work plans would limit permanent displacement of wildlife species and loss of key roosting, nesting, or hibernating habitat.

Localized short-term moderate adverse impacts could occur if vista clearing results in temporary displacement of wildlife species and loss of roosting, nesting, or hibernating habitat. Measurable and perceptible changes in wildlife populations within an isolated area are expected to last up to five years following vista clearing. Removal of key habitat features, such as snags, large diameter trees and logs, oak trees, and decaying wood in localized areas, could cause short-term habitat loss.

There could be a localized decrease in the proportion of larger trees in areas where vistas have been cleared. However, old growth trees would not be removed, and trees would remain if they are older than the year in which the vista point was established. These actions would minimize decreases of larger trees. Over time, loss of large trees and associated canopy and increase in understory vegetation could improve wildlife habitat and forage for some wildlife species, such as squirrels, while degrading wildlife habitat for more specialist species, such as cavity-nesting birds and roosting bats.

Under Alternative 4, sideboards on the size and density of vista clearing would limit clearing activities. There would be no comprehensive measures to protect specific habitat elements (as in alternatives 3 and 5). There would be a short-term minor adverse impact on wildlife as trees and shrubs are cleared and revegetation activities take place. Overall, there would be a long-term minor adverse impact on wildlife in Yosemite.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting wildlife would be the same as those under Alternative 1. Past impacts on wildlife have been adverse, long-term, and major. Local present actions would contribute to reversing the major adverse impacts of past actions on wildlife. In the context of the multiple, spatially massive, and potentially catastrophic past and present effects, the impacts of Alternative 1 would be negligible. The past, present, and future effects, along with impacts of Alternative 4, would result in long-term adverse moderate impacts on wildlife.

Impairment

Under Alternative 4, there would be a long-term minor to moderate adverse impact on wildlife in Yosemite. Sideboards would limit the size and density of vista clearing. There would be no comprehensive measures to protect specific habitat elements (as in alternatives 3 and 5). As impacts would be minor and adverse, Alternative 4 would not impair vegetation resources for future generations.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

This alternative emphasizes flexibility in terms of prioritizing vistas for management, and uses ecological conditions for determining the extent and intensity of vista clearing. A team of park professionals would prioritize vistas for management on an annual basis in the same manner as in Alternative 4. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for management. The ecological conditions at each vista site would determine the prescription for vegetation clearing in the same manner as in Alternative 3. About 167 vistas would be considered for initial treatment, continuing at a rate of about 30 each year.

The impacts of initial clearing could include removing trees and shrubs, and creating new gaps in the forest canopy. “Actions Common to All Action Alternatives” would establish a framework for clearing activities. Vistas would not be cleared to tree densities that are less than those prescribed in the FMP (NPS 2004b). The maximum size for viewing areas and feathering would be limited. Old growth trees would not be removed. Best management practices would be established regarding the use of mechanized equipment. Sites would be revegetated, and annual work plans would be posted for the public. Mitigation measures would be enacted to protect special-status species, birds, bats, the Pacific fisher, and important habitat components, such as snags and basal hollows in trees.

Under Alternative 5, most habitat components with particularly high value would remain, unless removing them were deemed critical to establishment of the vista. Most snags in subalpine communities would remain. Most large ponderosa pine and sugar pine snags in upper montane forest would remain. In lower montane and foothill zones, California black oak would be protected unless removing it were deemed critical to establishment of the vista.

In medium-value vistas, no clearing would take place in the midground of subalpine forest vistas, and snags would be protected unless locally common. In the upper montane forest, no clearing would take place in the midground of a vista and underrepresented species (per the FMP) would be protected. California black oak would be protected in lower montane vistas, and sugar pine would remain unless locally common. In foothill zones, California black oak would be protected unless removing it were deemed critical to establishment of the vista.

In low-value vistas, no initial clearing would take place. Maintenance actions would be acceptable in the foreground of lower and upper montane forest and subalpine or montane meadows. No red fir, Sierra juniper, sugar pine, broadleaved trees, or snags would be removed from low-value vistas.

There could be a localized decrease in the proportion of larger trees in areas where vistas have been cleared. However, old growth trees would not be removed, and trees would remain if they are older than the year in which the vista point was established. These actions would minimize decreases of larger trees. Over time, loss of large trees and associated canopy and increase in understory vegetation could improve wildlife habitat and forage for some wildlife species such as squirrels, while degrading wildlife habitat for more specialist species, such as cavity-nesting birds and roosting bats.

Specific species in the park that may be adversely affected by vista management activities, due to alteration, reduction, or removal of their habitat, include northern flying squirrel, big brown bat, Trowbridge shrew (George 1989), and American black bear. There could be a beneficial impact on species such as mule deer, spotted towhee, or golden-mantled ground squirrel as a result of postclearing regeneration of brushy or herbaceous vegetation. Review of annual work plans would limit permanent displacement of wildlife species and loss of key roosting, nesting, or hibernating habitat.

Localized short-term moderate adverse impacts could include temporary displacement of wildlife species, and loss of roosting, nesting, or hibernating habitat. Removal of key habitat features, such as snags, large diameter trees and logs, oak trees, and decaying wood in localized areas, could cause short-term habitat loss. Measurable and perceptible changes in wildlife populations within an isolated area are expected to last up to five years following vista clearing.

Alternative 5 would place sideboards on the size and density of vista clearing, and protect specific habitat components of particular biological importance. There would not be a standard method to prioritize vistas for treatment. Without consistent criteria to determine which vistas are to be treated, the impacts on wildlife would be less predictable. Mitigation measures would protect special-status wildlife and specific habitat components. Overall, Alternative 5 would have a long-term minor adverse impact on wildlife in Yosemite.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting wildlife would be the same as those under Alternative 1. Past impacts on wildlife have been adverse, long-term, and major. Local present actions would contribute to reversing the major adverse impacts of past actions on wildlife. In the context of the multiple, spatially massive, and potentially catastrophic past and present effects, the impacts of Alternative 1 would be negligible. The past, present, and future effects, along with impacts of Alternative 5, would result in long-term adverse moderate impacts on wildlife.

Impairment

Alternative 5 would place sideboards on the size and density of vista clearing, and protect specific habitat components of particular biological importance. As impacts would be long-term minor adverse, Alternative 5 would not impair vegetation resources for future generations.

SPECIAL-STATUS WILDLIFE

Affected Environment

Species Considered

A total of 33 special-status wildlife species were considered in the evaluation of this project (Table III-5). These species were identified based on consultation with the USFWS, data gathered from the NPS, and information from the California Natural Diversity Database (CDFG 2009).

Federally Threatened or Endangered Species

The USFWS provided a species list that includes federally listed threatened and endangered species, as well as candidate species that could be affected by this project. Aided by this list, internal NPS records, the California Natural Diversity Database, and professional judgment, it was determined that no federally listed threatened or endangered species are known to inhabit the project area for the SVMP. The Pacific fisher, a federal candidate species, may live within the project area. Four federal threatened species identified by USFWS, delta smelt, Paiute cutthroat trout, Central Valley steelhead, and California red-legged frog, do not inhabit the project area, and there would be no direct, indirect, or cumulative effects on these species from actions proposed. Therefore, these species are not evaluated in this environmental assessment. The Yosemite toad, Sierra Nevada bighorn sheep, and the Sierra Nevada yellow-legged frog are not known to live in the project area, but according to range and habitat data, they could feasibly be found within project areas in the future. The valley elderberry longhorn beetle is found in the lower elevations of Yosemite National Park, but the SVMP does not outline any modifications to take place within its range and habitat.

Critical Habitat

No critical habitat has been designated for any federally listed species within the project area.

Special-Status Species Categories

The terms listed below are used to categorize federal and state special-status species listed in Table III-6.

- Federal Endangered (FE): Any species that is in danger of extinction throughout all or a significant portion of its national range.
- Federal Threatened (FT): Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its national range.
- Federal Candidate (FC): Any species for which there is sufficient information on their biological status and threats to propose them as endangered or threatened under the Endangered Species Act (ESA), but for which development of a proposed listing regulation is precluded by other, higher priority listing activities.
- California Endangered (CE): Any species that is in danger of extinction throughout all or a significant portion of its range in the state.

- California Threatened (CT): Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its state range.
- California Candidate (CCS): A species that will be considered for possible state listing if sufficient evidence suggests that its status may meet the listing criteria defined for State Endangered, Threatened, or Sensitive.
- California Species of Special Concern (CSC): Any species that may become vulnerable to extinction on a state level as a result of declining population trends, limited range, and/or continuing threats; could become threatened or endangered.
- California Fully Protected (CFP): Species (including federal and state listed) that are rare or face possible extinction for which the state provides additional protection. The state of California regulates the possession and taking of these species.
- California Bird Species of Special Concern (BSSC): Any bird species currently at risk that may warrant listing under the California Endangered Species Act as threatened or endangered if remedial actions are not taken.
- California Watch List (CWL): The birds on this watch list 1) are not on the current Special Concern list, but were on previous lists, and they have not been state-listed under the California Endangered Species Act; 2) were previously listed by state and federal agencies and now are on neither list; or 3) are on the list of "fully protected" species. More information and brief accounts regarding each species are available in the report.

Table III-6. Special-status wildlife species evaluated in the Scenic Vista Management Plan

Special-Status Wildlife Species			
Species	**Status**		**Vegetation Zone[a]: Habitat Type/Occurrence**
	Fed	**State**	
Invertebrates			
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT		**FW**: Found only in association with its host plant, elderberry (*Sambucus* spp.), below 3,000 feet in elevation.
Amphibians			
Limestone salamander (*Hydromantes brunus*)		CT	**FW**: Very limited distribution along Merced River and its tributaries between elevations of 800 and 2,500 feet, usually in association with limestone outcrops. Not documented to date in El Portal, which lies within elevational range for the species. Not documented within Yosemite.
Mount Lyell salamander (*Hydromantes platycephalus*)		CSC	**SA, UM, ME, BA**: Largely restricted to alpine or subalpine vegetation associations in outcrops of rocks and boulders with free surface water, such as a stream, waterfall, or melting snow, nearby.
Yosemite toad (*Anaxyrus canorus*)	FC	CSC	**SA, UM, ME, BA**: Restricted to areas of wet meadows in central Sierra Nevada between elevations of 6,400 and 11,300 feet.
Sierra Nevada yellow-legged frog (*Rana sierrae*)	FC	CSC	**SA, UM, LM, BA**: Inhabits lakes, meadow streams, and ponds in mid- to high-elevation mountain habitats from 6,000 to over 12,000 feet.

Table III-6. Special-status wildlife species evaluated in the Scenic Vista Management Plan

Special-Status Wildlife Species			
Species	**Status**		**Vegetation Zone[a]: Habitat Type/Occurrence**
	Fed	**State**	
Western pond turtle (*Actinemys marmorata*)		CSC	**UM, LM, FW**: Found in both permanent and intermittent waters such as marshes, streams, ponds, and lakes. Usually requires emergent logs or boulders for basking.
Birds			
Harlequin duck (*Histrionicus histrionicus*)		CSC BSSC	**LM, UM**: Breeds along large, swift-moving mountain rivers on the west slope of the central Sierra Nevada from about 4,000 feet upward in the summer. While never common, they were formerly found in every major watershed in the Sierra. Nesting in Yosemite Valley was documented most recently in spring 2002, and individuals and/or pairs have been observed annually from 2002 to 2007.
Northern goshawk (*Accipiter gentilis*)		CSC BSSC	**UM, SA:** Favors moderately dense coniferous forests broken by meadows, and other openings, between 5,000 and 9,000 feet in elevation. The species typically nests in mature conifer stands near streams. Habitat destruction in its range has caused declines in population.
Golden eagle (*Aquila chrysaetos*)		CFP CWL	**UM, LM, BA:** Found in a wide range of elevations in the park. Needs open terrain for hunting. Feeds primarily on small mammals. Nests on cliffs and in large trees in open areas.
Bald eagle (*Haliaeetus leucocephalus*)		CE CFP	**LM, ME, BA**: Forages over river, streams, and lakes. Primarily eats fish; also eats carrion, water birds, and small mammals. Nesting is known to occur in the park.
Prairie falcon (*Falco mexicanus*)		CWL	**SA, BA:** Primarily associated with open areas such as grasslands and meadows, where it feeds on small mammals and birds. Nests on cliffs in Yosemite's subalpine and alpine areas.
American peregrine falcon (*Falco peregrinus anatum*)		CE CFP	**LM, ME, BA**: Usually nests on high cliffs near water and searches for prey along cliffs and over surrounding habitats. Four known active nest sites in Yosemite. Species has shown recovery, but numbers may continue to be affected by pesticide contamination.
Long-eared owl (*Asio otus*)		CSC BSSC	**UM, LM:** Known to inhabit primarily riparian and live oak woodlands and thickets in association with open grassland, meadow, or agricultural foraging habitats. Also occasionally uses high elevation coniferous forests, but only in association with large open grasslands or scrublands.
Great gray owl (*Strix nebulosa*)		CE	**UM, LM, ME**: Entire California population of this species is restricted to the Yosemite region, where it reaches southernmost extent of its North American range. Breeds in mixed-conifer/ red fir forests bordering meadows. Winters in mixed-conifer down to blue oak woodlands. Research suggests that human disturbance could affect foraging success of this species, which may explain its absence from the Valley.

Table III-6. Special-status wildlife species evaluated in the Scenic Vista Management Plan

Special-Status Wildlife Species			
Species	**Status**		**Vegetation Zone[a]: Habitat Type/Occurrence**
	Fed	**State**	
California spotted owl (*Strix occidentalis occidentalis*)		CSC BSSC	**UM, LM, FW**: Breeds in oak and ponderosa pine forests upslope to lower elevation red fir forests (up to elevations of 7,600 feet), with mixed conifer the optimum type. Presence of California black oak in the forest canopy also enhances habitat suitability. Likely cause for decline is habitat destruction and fragmentation from logging and development. Severe wildland fire in mixed-conifer forests may represent the greatest threat to existing spotted owl habitat in Yosemite.
Vaux's swift (*Chaetura vauxi*)		CSC BSSC	**LM, UM**: A rare summer resident from 4,000 to 7,000 feet on west slope. Often associated with old growth forests where standing, hollow snags afford suitable nesting and roosting sites.
Black swift (*Cypseloides niger*)		CSC BSSC	**LM:** A fairly common summer resident from 4,000 to 7,500 feet and a rare transient at higher elevations on west slope of the Sierra Nevada. Nests behind waterfalls and on steep cliffs. Potentially more than a third (about 80 pairs) of the breeding population is located in the Mariposa County portion of the park.
Olive-sided flycatcher (*Contopus cooperi*)		CSC BSSC	**LM, UM:** Inhabits late-successional conifer forests with open canopies (e.g., 0-30% canopy cover); primarily in open mixed-conifer and red fir.
Willow flycatcher (*Empidonax traillii*)		CE	**LM, FW, ME**: Breeds in mountain meadows and riparian areas from 2,000 to 8,000 feet elevation in the Sierra Nevada, with lush growth of shrubby willows. Has disappeared from much of its range, due to habitat destruction and parasitism by brown-headed cowbirds.
Yellow warbler (*Dendroica petechia*)		CSC BSSC	**LM, FW, ME**: Inhabits riparian woodlands, mixed conifer, and other coniferous forest habitats, usually with substantial understory brush. In recent decades, numbers of breeding pairs have declined dramatically in Yosemite National Park.
Mammals			
Mount Lyell shrew (*Sorex lyelli*)		CSC	**AL, SA:** Observed only in the vicinity of Mt. Lyell, within or near Yosemite. Favors moist areas near streams, in grass, or under willows.
Pallid bat (*Antrozous pallidus*)		CSC	**LM, FW:** Primarily found below 6,000 feet in elevation, in a variety of habitats, especially oak, ponderosa pine, and giant sequoia habitats. Roosts in rock outcrops, caves, and especially hollow trees.
Townsend's big-eared bat (*Corynorhinus townsendii townsendii*)		CSC	**UM, LM, ME**: Majority of records are from low to middle elevations, though the species has been found at almost 9,000 feet. Uses caves, mines, or buildings for roosting. Prefers mesic habitats where it gleans prey from brush or trees along habitat edges.
Spotted bat (*Euderma maculatum*)		CSC	**SA, UM, LM, ME:** Rare throughout range, but relatively abundant in Yosemite. Uses crevices in rock faces for roosting and reproduction. Forages in a wide variety of habitats, primarily for moths.

Table III-6. Special-status wildlife species evaluated in the Scenic Vista Management Plan

Special-Status Wildlife Species			
Species	**Status**		**Vegetation Zone[a]: Habitat Type/Occurrence**
	Fed	**State**	
Western red bat (*Lasiurus blossevillii*)		CSC	**UM, LM, FW, ME**: Roosts in foliage. Breeding females appear to be highly associated with low elevation riparian habitats and are most often observed in the Central Valley and southern coastal areas. Individuals (most likely males or nonreproductive females) have been documented at up to 7,500 feet in the Sierra Nevada.
Western mastiff bat (*Eumops perotis californicus*)		CSC	**UM, LM, ME**: Found in a variety of habitats to over 9,800 feet in elevation. Roosts primarily in crevices in cliff faces, and occasionally trees. Detected most often over meadows and other open areas, but will also feed above forest canopy; sometimes to high altitudes (1,000 feet).
Sierra Nevada snowshoe hare (*Lepus americanus tahoensis*)		CSC	**LM, UM:** Inhabits conifer forests 3,000 to 7,000 feet; favors dense streamside vegetation amid alders and willows, in dense thickets of young conifers, and under ceanothus-manzanita chaparral.
Western white-tailed jackrabbit (*Lepus townsendii townsendii*)		CSC	**AL, SA, UM**: An uncommon, year-round resident of the Sierra crest and upper eastern slope of the Sierra Nevada to 12,000 feet. Prefers sagebrush, subalpine conifer, juniper, alpine dwarf-shrub and perennial grassland.
Sierra Nevada mountain beaver (*Aplodontia rufa californica*)		CSC	**UM, LM, ME**: Generally found in association with moist meadows and montane riparian habitat and occasionally in open, brushy stages of most forest types in the Sierra Nevada.
Sierra Nevada red fox (*Vulpes vulpes necator*)		CT	**AL, SA, UM, BA, ME**: Primarily found in red fir, lodgepole pine, subalpine forests, and alpine Sierra. Found mostly above 7,000 feet and rarely below 5,000 feet elevation.
California wolverine (*Gulo gulo luteus*)		CT CFP	**AL, SA, ME, BA**: Formerly ranged throughout the high Sierra, chiefly above 8,000 feet; never common, it is now extremely rare. With the exception of a documented sighting in the Tahoe National Forest in 2008, no wolverine sighting has been confirmed in California since the 1920s.
Pacific fisher (*Martes pennanti*)	FC	CCS CSC	**UM, LM**: A specialized forest carnivore associated with closed-canopy late-successional forest between 5,000 and 8,000 feet. Feeds on squirrels, rodents, and birds. Solitary and apparently needs large areas of mature forests free of human disturbance. Yosemite represents the northern distribution of the southern Sierra population.
Sierra Nevada bighorn sheep (*Ovis canadensis sierrae*)	FE	CE	**AL, BA**: High elevation species that was reintroduced to the park in 1986. Population numbers have fluctuated between a high of 85+ animals in 1991 to about 40 today.

Vegetation Zone[a] : AL=Alpine, SA=Subalpine Forest, UM=Upper Montane, LM=Lower Montane, FW=Foothills Woodland, ME=Meadow, BA=Barren

Environmental Consequences

Methodology

Guidance for this analysis is outlined in the 1998 U.S. Fish and Wildlife Service and National Marine Fisheries Service's *Endangered Species Act Consultation Handbook: Procedures for Conducting Section 7 Consultations and Conference* (USFWS NMFS 1998). If listed species or their critical habitat are present, federal agencies must determine if the action will have "no effect," "may affect, not likely to adversely affect," or "may affect, likely to adversely affect" those species or their habitat status.

No Effect: Scenic vista management activities would be located outside suitable habitat and there would be no disturbance or other direct, indirect, or cumulative impacts on the species. The action would not affect the listed species or its designated critical habitat (USFWS NMFS 1998).

May Affect, Not Likely to Adversely Affect: Scenic vista management activities would occur in suitable habitat or result in indirect impacts on the species. However, given circumstances or mitigation conditions, the effect on the species is likely to be beneficial, discountable, or insignificant. Insignificant effects "relate to the size of the impact and should never reach the scale where take occurs." Discountable effects are "extremely unlikely to occur." Therefore, "based on best judgment, a person would not 1) be able to meaningfully measure, detect, or evaluate insignificant effects or 2) expect discountable effects to occur" (USFWS NMFS 1998, 3-12).

May Affect, Likely to Adversely Affect: Scenic vista management activities would have an adverse effect on a listed species as a result of direct, indirect, interrelated, or interdependent actions, or as a cumulative result of the proposed action or its interrelated or interdependent actions. The effect would not be discountable, insignificant, or beneficial (USFWS 1998).

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. Maximum widths and depths for vista clearing would not be specified. Environmental compliance would take place on a case-by-case basis, and actions to ensure protection of special-status wildlife would be applied to each vista under consideration. Vista clearing activity would be minimal, and the effect on special-status species is expected to be insignificant. Alternative 1 may affect, and is not likely to adversely affect, special-status wildlife.

Cumulative Impacts

Cumulative impacts on special-status wildlife are based on analysis of past, present, and reasonably foreseeable future actions in California and the Yosemite region in conjunction with the potential effects of this alternative. Past and present effects on special-status wildlife include fire suppression and its effect on wildlife habitat, the deposition of chemical compounds from outside the park, the presence of nonnative species (including pathogens), and land management practices outside Yosemite. In California, massive habitat fragmentation and the draining of wetlands have impacted migratory bird species, and have increased the relative importance of the remaining unspoiled habitat. Market hunting and disease have decimated the populations of many large ungulates, including Sierra Nevada Bighorn sheep. Air pollution, increased ultraviolet radiation, and global climate changes are postulated to be

contributors to large amphibian declines (although chytrid fungus and nonnative fish may have caused the greatest level of harm). Pesticides, particularly insecticides, have decreased insect populations and caused adverse impacts on bats and other species that depend on insects for food. In the foreseeable future, climate change has the potential for large-scale major adverse impacts on special-status wildlife. Climate change could accelerate the arrival and spread of nonnative plant species by making higher elevations of the park more suitable for these species through warming. These past, present, and foreseeable future impacts are long-term adverse major.

Local past and present actions would have both beneficial and adverse impacts on special-status wildlife. Parkwide planning efforts such as the Merced and Tuolumne Wild and Scenic comprehensive management plans and the *High Elevation Aquatic Ecosystem Recovery and Stewardship Plan* would provide large-scale watershed protection to special-status wildlife. Prescribed fire and managed wildland fire activities would greatly reduce the threat of large high-severity catastrophic fires, and would reduce the potential for habitat conversion. Some actions, such as the Henness Ridge Environmental Education Campus, could reduce available wildlife habitat in the park, though this action has mitigations to protect special-status species at risk.

Past impacts on special-status wildlife have been adverse long-term major. Local present actions would contribute to reversing the major adverse impacts of past actions on wildlife. In the context of the multiple, spatially massive, and potentially catastrophic past and present effects, the impacts of Alternative 1 would be negligible. The past, present, and future effects, along with impacts of Alternative 1, would result in long-term adverse moderate impacts on wildlife.

Impairment

Vista clearing activity would be minimal, and the effect on special-status wildlife species is expected to be insignificant. Therefore, Alternative 1 may affect, and is not likely to adversely affect, special-status wildlife. Alternative 1 would not impair the park's special-status wildlife for future generations.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment.

"Actions Common to All Action Alternatives" would establish a framework for clearing activities. Vistas would not be cleared to tree densities that are less than those prescribed in the FMP (NPS 2004b). The maximum size for viewing areas and feathering would be limited. Old growth trees would not be removed. Best management practices would be established regarding the use of mechanized equipment. Sites would be revegetated, and annual work plans would be posted for public viewing.

Specific special-status bird species that prefer large coniferous trees could be affected by vista management within the lower montane mixed coniferous forest zone. For example, the California spotted owl depends upon large trees or snags for nesting, and will nest in fir, oak, pine, or sequoia trees. Most spotted owl nests are found in areas that have dense canopy cover, but few are found closer than 100 meters from roads (Steger 1997). The olive-sided flycatcher prefers habitat in burned forest containing snags and moist areas. It is more often found in early or late successional forest, but not in intermediate successional forest (George 1989). Several additional bird species depend upon late successional conifer forest, including the Northern goshawk, Great gray owl, and Vaux's swift.

Specific bat species could also be affected by vista management activities if activities occurred during bat nesting seasons, as bats may use cavities in snags or trees for nesting. These species include Townsend's big-eared bat, spotted bat, western red bat, and western mastiff bat. Important habitat for the Pacific fisher, a candidate for federal listing, includes areas of dense cover, large trees as well as snags, steep slopes, and nearby water (Zielinksi 2004).

As stated in the mitigation measures, potential vista management activities would be evaluated by a qualified biologist, and suitable mitigation measures would be applied. If inventories were required, any site modification or clearing would be delayed until the inventory and mitigation were complete. If potential impacts on special-status wildlife could not be mitigated, including impacts on the habitat that sustains special-status wildlife, the proposed work site would be eliminated from consideration. With this mitigation, adverse impacts on special-status wildlife individuals and populations would be insignificant. Therefore, Alternative 2 may affect, and is not likely to adversely affect, special-status wildlife.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting vegetation would be the same as under Alternative 1. Past impacts on special-status wildlife have been adverse long-term major. Amphibians would continue to undergo long term major adverse impacts resulting from chytrid fungus and associated impacts. Local present actions would contribute to reversing the major adverse impacts of past actions on wildlife. In the context of the multiple, spatially massive, and potentially catastrophic past and present effects, the impacts of Alternative 2 would be negligible. The past, present, and future effects, along with impacts of Alternative 2, would result in long-term adverse moderate impacts on wildlife.

Impairment

If potential impacts on special-status wildlife cannot be mitigated, including impacts on the habitat that sustains special-status wildlife, the proposed work site would be eliminated from consideration. With this mitigation, adverse impacts on special-status wildlife would be insignificant. Therefore, Alternative 2 may affect, and is not likely to adversely affect special-status wildlife. Alternative 2 would not impair the park's special-status wildlife for future generations.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas.

"Actions Common to All Action Alternatives" would establish a framework for clearing activities. Vistas would not be cleared to tree densities that are less than those prescribed in the FMP (NPS 2004b). The maximum size for viewing areas and feathering would be limited. Old growth trees would not be removed. Best management practices would be established regarding the use of mechanized equipment. Sites would be revegetated, and annual work plans would be posted for public viewing. Mitigation measures would be enacted to protect special-status wildlife.

Specific special-status bird species that prefer large coniferous trees could be affected by vista management within the lower montane, mixed coniferous forest zone. For example, the California spotted owl depends upon large trees or snags for nesting, and will nest in fir, oak, pine, or sequoia trees. Most spotted owl nests are found in areas that have dense canopy cover, but few are found closer than 100 meters to roads (Steger 1997). The olive-sided flycatcher prefers habitat in burned forest containing snags and moist areas. It is more often found in early or late successional, but not intermediate succesional forest (George 1989). Several additional bird species depend upon late successional conifer forests, including the Northern goshawk, Great gray owl, and Vaux's swift.

Specific bat species could also be affected by vista management activities, if activities occurred during bat nesting seasons, as bats may use cavities in snags or trees for nesting. These species include Townsend's big-eared bat, spotted bat, western red bat, and western mastiff bat. Important habitat for the Pacific fisher, a candidate for federal listing, includes areas of dense cover, large trees, snags, steep slopes, and nearby water (Zielinksi 2004).

As stated in the mitigation measures, potential vista management activities would be evaluated by a qualified biologist, and suitable mitigation measures would be applied. If inventories were required, any site modification or clearing would be delayed until the inventory and mitigation were complete. If potential impacts on special-status wildlife could not be mitigated, including impacts on the habitat that sustains special-status wildlife, the proposed work site would be eliminated from consideration. With this mitigation, adverse impacts on special-status plant individuals and populations would be insignificant. Therefore, Alternative 3 may affect, and is not likely to adversely affect, special-status wildlife.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting vegetation would be the same as those under Alternative 1. Past impacts on special-status wildlife have been adverse long-term major. Amphibians would continue to undergo long-term major adverse impacts resulting from chytrid fungus and associated impacts. Local present actions would contribute to reversing the major adverse impacts of past actions on wildlife. In the context of the multiple, spatially massive, and potentially catastrophic past and present effects, the impacts of Alternative 3 would be negligible. The past, present, and future effects, along with impacts of Alternative 3, would result in long-term adverse moderate impacts on wildlife.

Impairment

If potential impacts on special-status wildlife could not be mitigated, including impacts on the habitat that sustains special-status wildlife, the proposed work site would be eliminated from consideration. With this mitigation, adverse impacts on special-status wildlife would be insignificant. Therefore, Alternative 3 may affect, and is not likely to adversely affect, special-status wildlife. Alternative 3 would not impair the park's special-status wildlife for future generations.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

This alternative is the most flexible in prioritizing and managing vistas. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for treatment on an annual basis. Once vistas were prioritized for treatment, park staff would apply a standardized clearing

prescription as in Alternative 2 (Table 2-X). About 181 vistas would be considered for initial treatment, continuing at a rate of about 30 each year.

The impacts of initial clearing could include removing trees and shrubs, and opening gaps in the forest canopy. "Actions Common to All Action Alternatives" would establish a framework for clearing activities. Vistas would not be cleared to tree densities that are less than those prescribed in the FMP (NPS 2004b). The maximum size for viewing areas and feathering would be limited according to the value of the vista. Old growth trees would not be removed. Best management practices would be established regarding the use of mechanized equipment. Sites would be revegetated, and annual work plans would be posted for public viewing.

Specific special-status bird species that prefer large coniferous trees could be affected by vista management within the lower montane, mixed coniferous forest zone. For example, the California spotted owl depends upon large trees or snags for nesting, and will nest in fir, oak, pine, or sequoia trees. Most spotted owl nests are found in areas that have dense canopy cover, but few are found closer than 100 meters from roads (Steger 1997). The olive-sided flycatcher prefers habitat in burned forest containing snags and moist areas. It is more often found in early or late successional forest, but not in intermediate successional forest (George 1989). Several additional bird species depend upon late successional conifer forests, including the Northern goshawk, Great gray owl, and Vaux's swift.

Specific bat species could also be affected by vista management activities, if activities occurred during bat nesting seasons, as bats may use cavities in snags or trees for nesting. These species include Townsend's big-eared bat, spotted bat, western red bat, and western mastiff bat. Important habitat for the Pacific fisher, a candidate for federal listing, includes areas of dense cover, large trees, snags, steep slopes, and nearby water (Zielinksi 2004).

Alternative 4 does not use a standard methodology to prioritize vistas for treatment. Without consistent criteria to determine which vistas are to be treated, the impacts on vegetation and other resources would be less predictable. Limits on vegetation clearing in high-value vistas would be minimal. Potential vista management activities would be evaluated by a qualified biologist, and suitable mitigation measures would be applied. If inventories were required, any site modification or clearing would be delayed until the inventory and mitigation were complete. If potential impacts on special-status wildlife could not be mitigated, including impacts on the habitat that sustains special-status wildlife, the proposed work site would be eliminated from consideration. With this mitigation, adverse impacts on special-status plant individuals and populations would be insignificant. Therefore, Alternative 4 may affect, and is not likely to adversely affect, special-status wildlife.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting vegetation would be the same as under Alternative 1. Past impacts on special-status wildlife have been adverse long-term major. Amphibians would continue to undergo long-term major adverse impacts resulting from chytrid fungus and associated impacts. Local present actions would contribute to reversing the major adverse impacts of past actions on wildlife. In the context of the multiple, spatially massive, and potentially catastrophic past and present effects, the impacts of Alternative 4 would be negligible. The past, present, and future effects, along with impacts of Alternative 4, would result in long-term adverse moderate impacts on wildlife.

Impairment

Under Alternative 4, if potential impacts on special-status wildlife could not be mitigated, including impacts on the habitat that sustains special-status wildlife, the proposed work site would be eliminated from consideration. With this mitigation, adverse impacts on special-status plant individuals and

populations would be insignificant. Therefore, Alternative 4 may affect, and is not likely to adversely affect, special-status wildlife. Alternative 4 would not impair the park's special-status wildlife for future generations.

Alternative 5: Professional Team Assessment with Ecological Conditions to Determine Intensity of Vista Clearing

Analysis

This alternative emphasizes flexibility in terms of prioritizing vistas for management, and uses ecological conditions for determining the extent and intensity of vista clearing. A team of park professionals would prioritize vistas for management on an annual basis in the same manner as in Alternative 4. Managers could use factors such as the popularity of a site or the facilities available at a site to prioritize vistas for management. The ecological conditions at each vista site would determine the prescription for vegetation clearing in the same manner as in Alternative 3 (see Table II-8). About 167 vistas would be considered for initial treatment, continuing at a rate of about 30 each year.

The impacts of initial clearing could include removing trees and shrubs, and opening gaps in the forest canopy. "Actions Common to All Action Alternatives" would establish a framework for clearing associated activities. Vistas would not be cleared to tree densities that are less than those prescribed in the FMP (NPS 2004b). The maximum size for viewing areas and feathering would be limited according to the value of the vista. Old growth trees would not be removed. Best management practices would be established regarding the use of mechanized equipment. Sites would be revegetated, and annual work plans would be posted for public viewing.

Specific special-status bird species that prefer large coniferous trees could be affected by vista management within the lower montane, mixed coniferous forest zone. For example, the California spotted owl depends upon large trees or snags for nesting, and will nest in fir, oak, pine, or sequoia trees. Most spotted owl nests are found in areas that have dense canopy cover, but few are found closer than 100 meters from roads (Steger 1997). The olive-sided flycatcher prefers habitat in burned forest containing snags and moist areas. It is more often found in early or late successional forest, but not intermediate successional forest (George 1989). Several additional bird species depend upon late successional conifer forests, including the Northern goshawk, Great gray owl, and Vaux's swift.

Specific bat species could also be affected by vista management activities, if activities occurred during bat nesting seasons, as bats may use cavities in snags or trees for nesting. These species include Townsend's big-eared bat, spotted bat, western red bat, and western mastiff bat. Important habitat for the Pacific fisher, a candidate for federal listing, includes areas of dense cover, large trees, snags, steep slopes, and nearby water (Zielinksi 2004).

Under Alternative 5, habitat components with particularly high value would remain, unless removing them were deemed critical to establishment of the vista. Potential vista management activities would be evaluated by a qualified biologist, and suitable mitigation measures would be applied. If inventories were required, site modification or clearing would be delayed until the inventory and mitigation were complete. If potential impacts on special-status wildlife could not be mitigated, including impacts on the habitat that sustains special-status wildlife, the proposed work site would be eliminated from consideration. With this mitigation, adverse impacts on special-status plant individuals and populations would be insignificant. Therefore, Alternative 5 may affect, and is not likely to adversely affect, special-status wildlife.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting vegetation would be the same as under Alternative 1. Past impacts on special-status wildlife have been adverse long-term major. Amphibians would continue to undergo long-term major adverse impacts resulting from chytrid fungus and associated impacts. Local present actions would contribute to reversing the major adverse impacts of past actions on wildlife. In the context of the multiple, spatially massive, and potentially catastrophic past and present effects, the impacts of Alternative 5 would be negligible. The past, present, and future effects, along with impacts of Alternative 5, would result in long-term adverse moderate impacts on wildlife.

Impairment

Under Alternative 5, if potential impacts on special-status wildlife could not be mitigated, including impacts on the habitat that sustains special-status wildlife, the proposed work site would be eliminated from consideration. With this mitigation, adverse impacts on special-status wildlife would be insignificant. Therefore, Alternative 5 may affect, and is not likely to adversely affect, special-status wildlife. Alternative 5 would not impair the park's special-status wildlife for future generations.

SOILS

Affected Environment

Soils form over time through complex interactions among the source material, climate, topography, and living organisms. Diverse soil-forming processes have produced about 150 soil types in the Yosemite region (DOA 2007). Of these 150 regional types, more than 50 exist within the park; general or local variations depend on glacial history and on the ongoing influences of weathering, and of stream erosion and deposition. Topography influences surface water runoff, groundwater, the distribution of stony soils, and the separation of alluvial soils (Zinke and Alexander 1963). Local variations also result from differences in microclimates due to aspect and major vegetation types. Soil in Yosemite constitutes a diverse, intact, and functioning ecosystem that is home to a wide range of microbial and animal groups, including bacteria, protozoa, nematodes, and fungi. Soils of the Yosemite region are derived primarily from underlying granitic bedrock. Most soils at high elevations were developed from glacial material (glacial soils) or developed in place from bedrock (residual soils). Extensive areas above 6,000 feet are covered by glacial moraine material, a mixture of fine sand, glacial flour, pebbles, cobbles, and boulders of various sizes. Alluvial soils, along streams, tend to have sorted horizons (layers) of sandy material. Colluvial soils along the edges of the Valley in areas where landslides and rockslides have occurred are composed of variously sized particles and rocks and have high rates of infiltration and permeability. Organic content within the upper soil profile varies with the local influences of moisture and drainage. Thick sedges and grasses have contributed to the organic content of soils near ponds, lakes, and streams. Coniferous forest soils have a relatively high organic content and are relatively acidic. Sometimes soils lack organic accumulations as a result of granitic weathering; such soils consist largely of sand, and support only scattered plants tolerant to drought-like conditions. Hydric soils form in

wetlands, which are protected by federal law. Hydric soils are found primarily in the river valleys of the Merced River and Tenaya Creek, and in low meadows.

Environmental Consequences

Methodology

The capacity of soil to maintain and promote a healthy ecosystem depends on the resistance of the soil to degradation. Resistance to degradation is the ability of a soil system to function without change through a disturbance (Pimm 1984). Disturbances that can lead to soil degradation include trampling, climate change, alterations in hydrologic processes, and the introduction of invasive species.

This environmental assessment considers impacts on three categories of soils: sensitive soils, resilient soils, and other soils.

Sensitive soils support or have the potential to support highly valued vegetation communities such as meadows and wetlands, and have an aggregate structure and chemistry that are easily affected by disturbance.

Resilient soils are less affected by disturbance and are capable of withstanding alteration and heavier use without permanent deformation, or recover more easily from alteration and disturbance. Resilient soils are typically well-drained upland sandy soils.

Other soils are not considered highly valued or resilient soils. Generally, these soils limit use because of steep slopes or other physical habitats. Other soils are generally more abundant and do not support vegetation communities that are rare or notably diverse.

Type of Impact: This analysis identifies potential impacts as either beneficial or adverse. Impacts are considered beneficial if implementation of an alternative would protect or restore natural soil conditions, including soil structure and moisture. Impacts are considered adverse if implementation of an alternative would degrade chemical or physical soil components.

Duration of Impact: The duration of an impact is the time required for soil to recover after treatment. This analysis characterizes the duration of soil impacts as short-term or long-term. The impact on soil quality is considered short-term if soil system recovery takes less than 20 years. The impact on soil quality is considered long-term (or permanent) if recovery takes over 20 years. The duration of impact for all actions proposed in this plan is expected to be much less than 20 years.

Intensity of Impact: The intensity of an impact on soils is a measure of the degradation of ecosystem function or soil quality. Impact intensity is characterized as negligible, minor, moderate, or major. Negligible impacts or disturbances to the soil would be detectable, but slight (i.e., could be detected when posttreatment conditions are closely compared with existing site conditions). A negligible impact would result, for example, if seedling trees were pulled up by hand and soil clung to the roots, or if crews caused minor compaction by walking in wetland soils to remove saplings.

Minor impacts or disturbances would involve perceptible alterations in the soil. An example of a minor impact would be the operation of small (less than 10,000 pound) rubber-tracked equipment without the use of landing mats or other barriers between the equipment and the soil. The turning and maneuvering of small tracked equipment would disturb the soil and cause some compaction, but at a level below moderate.

Impacts that are readily apparent in less than 50% of the treated area would be characterized as moderate. Moderate impacts would have the potential to increase soil degradation on steep slopes or in sensitive areas. An example of a moderate impact would be the use of heavy equipment in an area with

steep slopes, or along a stream bank with unmitigated runoff. Rills would form in less than 50% of the treatment area, and there would be soil compaction.

Impacts that would be readily apparent in over 50% of the treated area would be characterized as major. More than 25% of the treated area would need to show severe effects of physical disturbance, including extensive compaction, to be considered major. An example of a major impact would be the use of heavy equipment on steep slopes, or on stream banks where rills and gullies form.

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. Standardized actions and mitigations to protect soils would not apply to vista clearing activities. Under Alternative 1, adverse impacts would be present due to social trails and denuded areas as visitors seek vantages that are less obscured. Soil would undergo moderate compaction and be at risk for erosion and invasive plant infestation, with sensitive soils being at greater risk than resilient or other soil types. Continued use of social trails would prevent these areas from revegetating or recovering on their own, which could extend the duration of the disturbance, although this possibility would depend on visitor use patterns. Alternative 1 would have long-term minor adverse impact on soils.

Cumulative Impacts

Cumulative impacts on soils are based on analysis of past, present, and reasonably foreseeable future actions in Yosemite National Park, along with the potential effects of this alternative. During the past 150 years, activities associated with urbanization (building construction, utility installation, road and bridge building) of agricultural and forestry activities in California and in Yosemite National Park have had adverse impacts on soils. The removal of the El Capitan Moraine in 1879, coupled with later ditching in meadows, has altered the hydrologic regime and negatively impacted soils. Visitor use has caused social trail formation that can have localized minor negative impacts with increased soil disturbance, compaction, and erosion. Impacts range from direct loss of soil ecosystems to indirect losses such as changes in water flows that saturate wetland soils. The overall effect of statewide activities on soil ecosystems and soil quality has been adverse long-term major.

Present activities conducted by Yosemite National Park and regional activities may be both beneficial and adverse for soils. Current plans, such as the *General Management Plan for Yosemite*, the *Fire Management Plan*, the *Invasive Plant Management Plan,* and the *Vegetation Management Plan*, provide guidance in protecting soils. Control of invasive plants, for example, would have a beneficial impact on soil resources, because invasive plants can alter nutrient cycling and biotic processes in the soil. Wildland fire management activities would remove heavy litter layers, allowing oxygen to reach the soil surface and returning bound nutrients to the soil. These actions would have a long-term negligible beneficial impact.

Projects such as the Yosemite Institute Environmental Education Campus, the Tioga Trailheads Project, Crane Flat Utilities, and the Glacier Point, Wawona, Tioga, and Valley Loop roads rehabilitation projects could have local negligible negative short-term impacts on soils due to construction operations. Increased small-scale ecological restoration projects continue to take place and are likely to benefit soils by restoring natural conditions, including soil structure and moisture. Reasonably foreseeable actions such as the Tuolumne and Merced Wild and Scenic River comprehensive management plans, *Invasive Plant Management Plan* reissue, and continued ecological restoration projects could result in localized long-term minor beneficial effects on soils.

Although the past impacts on soil ecosystems have been adverse long-term major, the current trend of lessening impacts on soils and restoration continues and would result in long-term beneficial minor impacts. When considered in terms of Alternative 1, impacts on soils would continue to be long-term minor beneficial.

Impairment

Because impacts on park soils associated with Alternative 1 would be minor, Alternative 1 would not impair the park's vegetation communities for future generations.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment.

Vista clearing and management would increase along road corridors, in nonwilderness meadows, and throughout Yosemite Valley. The "Actions Common to All Action Alternatives," "Mechanized Equipment Use," "Soils," and "Mitigations" sections provide a framework to minimize potential adverse impacts. With the incorporation of these measures, soil disturbance as a result of vista clearing activities would be avoided or minimized. With the reduction in social trails anticipated as a result of visitors' not walking off paved viewing areas, and the corresponding revegetation of previously compacted areas, there would be long-term benefits. There would be a short-term minor adverse impact on soils, but overall the alternative would produce long-term negligible to minor benefits.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting soils would be the same as those under Alternative 1. Cumulative impacts of these projects, combined with Alternative 2, could have short-term adverse impacts on soils within the proposed project area as a result of vegetation removal, but would result in localized negligible to minor beneficial impacts on soils over the long-term.

Impairment

Alternative 2 would have negligible to minor beneficial impacts on soils over the long-term. Alternative 2 would not impair the park's soils for future generations.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas. Vista clearing and management would increase along road corridors and in nonwilderness meadows, as well as throughout Yosemite Valley. The "Actions

Common to All Alternatives," "Mechanized Equipment Use," "Soils," and "Mitigations" sections provide a framework to minimize potential adverse impacts on resilient, sensitive, and other soils. With the incorporation of these measures, soil disturbance as a result of vista clearing activities would be avoided or minimized. With the reduction in social trails anticipated as a result of visitors' not walking off paved viewing areas, and the corresponding revegetation of previously compacted areas, there would be long-term benefits. There would be a short-term minor adverse impact on soils, but overall the alternative would produce localized long-term negligible to minor benefits.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting soils would be the same as under Alternative 1. Cumulative impacts of these projects, combined with Alternative 3, could have short-term adverse impacts on soils within the proposed project area as a result of vegetation removal, but overall the alternative would produce localized negligible to minor beneficial impacts on soils over the long-term.

Impairment

Alternative 3 would have negligible to minor beneficial impacts on soils over the long-term. Alternative 3 would not impair the park's soils for future generations.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

Under Alternative 4, vista clearing activities would take place, using Professional Team Assessment to prioritize vistas and Scenic Value to determine management actions. Vista clearing and management would increase along road corridors and in nonwilderness meadows, as well as throughout Yosemite Valley. The "Actions Common to All Alternatives," "Mechanized Equipment Use," "Soils," and "Mitigations" sections provide a framework to minimize potential adverse impacts on resilient, sensitive, and other soils. With the incorporation of these measures, soil disturbance as a result of vista clearing activities would be avoided or minimized. With the reduction in social trails anticipated as a result of visitors' not walking off paved viewing areas, and the corresponding revegetation of previously compacted areas, there would be long-term benefits. There would be a short-term minor adverse impact on soils, but overall the alternative would produce localized long-term negligible to minor benefits.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting soils would be the same as those under Alternative 1. Cumulative impacts of these projects, combined with Alternative 4, could have short-term adverse impacts on soils within the proposed project area as a result of vegetation removal, but overall the alternative would result in localized negligible to minor beneficial impacts on soils over the long-term.

Impairment

Alternative 4 would produce negligible to minor beneficial impacts on soils over the long-term. Alternative 4 would not impair the park's soils for future generations.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

Under Alternative 5, vista clearing would take place, using Professional Team Assessment to prioritize vistas and Ecological Conditions to determine management actions. Vista clearing and management would increase along road corridors and in nonwilderness meadows, as well as throughout Yosemite Valley. The "Actions Common to All Alternatives," "Mechanized Equipment Use," "Soils," and "Mitigations" sections provide a framework to minimize potential adverse impacts on resilient, sensitive, and other soils. With the incorporation of these measures, soil disturbance as a result of vista clearing activities would be avoided or minimized. With the reduction in social trails anticipated as a result of visitors' not walking off paved viewing areas, and the corresponding revegetation of previously compacted areas, there would be long-term benefits. There would be a short-term minor adverse impact on soils, but overall the alternative would produce localized long-term negligible to minor benefits.

Cumulative Impacts

The past, present, and reasonably foreseeable projects affecting soils would be the same as under Alternative 1. Cumulative impacts of these projects, combined with Alternative 5, could have short-term adverse impacts on soils within the proposed project area as a result of vegetation removal, but would result in localized negligible to minor beneficial impacts on soils over the long-term.

Impairment

Alternative 5 would have negligible to minor beneficial impacts on soils over the long-term. Alternative 5 would not impair the park's soils for future generations.

HYDROLOGY AND WATER QUALITY

Affected Environment

The Tuolumne and Merced river watersheds are the two major watersheds within Yosemite National Park. Both rivers are tributaries of the San Joaquin River basin. Typical of central to southern Sierra Nevada watersheds, both the Tuolumne and Merced rivers are characterized by high and cold drainages, a Mediterranean climate (winter-precipitation dominated), rapid snowmelt seasons, and relatively thin soils. Within the park, the Tuolumne and Merced watersheds contain 2,735 km of streams, 3,200 lakes, and two reservoirs.

Streamflow in both watersheds is snowmelt-dominated; snowmelt can generate over 80% of annual streamflow volume. During the late fall and winter, precipitation falls mostly as snow above 1520 m,

where it is stored in the snowpack until the spring melt. Stream-flow peaks in the spring and early summer as the accumulated snow melts, whereas flows generally remain low throughout the winter months. From September through March, low flows are typically dominated by baseflow. The amount of baseflow is related directly to available groundwater storage and flow rates; however, due to a lack of storage capacity in the basins, baseflows are relatively minimal when compared with peak snowmelt runoff. For example, using daily mean flow data from the Happy Isles gauge in the Merced River basin for the period 1916 to 2006, the average ratio of the minimum annual flow to maximum snowmelt flow is less than 1.6%.

The Tuolumne River watershed is the major drainage system for the northern portion of the park. Within Yosemite National Park, the Tuolumne River and its tributaries drain an area of approximately 1730 km^2. Elevations of the Tuolumne River basin within the park boundaries range from 3997 m at Mount Lyell to a minimum of about 860 m in Poopanaut Valley, where the river exits the park's western boundary.

The Tuolumne has two principal sources: the Dana fork, which drains the west-facing slopes of Mount Dana, and the Lyell Fork, which begins at the base of the glacier on Mount Lyell. The confluence of the two forks occurs at the eastern end of Tuolumne Meadows, one of the largest subalpine meadow/wetland complexes in the Sierra Nevada. At the lower end of the meadows, the river continues through the Grand Canyon of the Tuolumne and enters the eastern end of Hetch Hetchy Reservoir. At O'Shaughnessy Dam, which impounds the Tuolumne, water is diverted through Canyon Tunnel to the Kirkwood Powerhouse. Water that is not diverted continues downstream in the Tuolumne River channel. In addition to Hetch Hetchy Reservoir, the City and County of San Francisco operate Lake Eleanor Reservoir, which is located on Eleanor Creek, upstream of its confluence with Cherry Creek.

Long-term Tuolumne River discharge is best quantified using calculated daily Hetch Hetchy inflows for the water years 1982-2009 (preliminary data used for 2008-2009). The maximum mean annual water year inflow into Hetch Hetchy was 2265 cubic feet per second (cfs) in 1983, and the minimum was 436 cfs in 1987. Average annual mean water year discharge for this period of record was 1104 cfs.

The Merced River watershed begins in the southern peaks of the park and drains an area of about 1323 km^2 within park boundaries. Elevations range from 3997 m at Mount Lyell to a minimum of about 500 m. The main stem of the Merced, growing from numerous tributaries, fills up lake basins such as Washburn Lake and Merced Lake before running through Yosemite Valley and the steep downstream Merced Canyon. The South Fork of the Merced flows through the area of Wawona, uniting with the main stem west of the park boundary.

Happy Isles (1916-present) and Pohono (1917-present) are the two long-term United States Geological Survey (USGS) river gauges on the main stem of the Merced River located in Yosemite Valley. Drainage areas above these gauges are 469 km^2 and 832 km^2, respectively. Using data from the 2009 water year, the maximum mean annual water discharge for both gauges were figured in 1983: The results were 802 cfs at Happy Isles and 1466 cfs at Pohono. The minimum mean annual water discharge was figured in 1977, with 84.9 cfs at Happy Isles and 126 cfs at Pohono. The annual mean water year discharge at Happy Isles is 354 cfs and 625 cfs at Pohono.

Water Quality

The term "water quality" is used to describe the physical, chemical, and biological condition of water as influenced by natural processes and human activities. Traditional measurements of water quality include temperature, pH, alkalinity, dissolved oxygen, conductivity, nutrients (such as nitrogen and phosphorous), microorganisms (such as *Escherichia coli* and *Giardia lambli*), and sediment load.

Natural disturbances such as forest fires, floods, and landslides can influence water quality by altering sediment loads. Additionally, human-caused disturbances such as those resulting in soil compaction

and vegetation loss in riparian areas can alter the river's equilibrium. For example, Madej, Weaver, and Hagans (1994) found that changes to the Merced River from 1919 to 1989 resulting in stream bank widening and erosion were strongly associated with areas of high human use. During this period, 74,800 tons of sediment were contributed to the river by bank erosion (Madej, Weaver, and Hagans 1994).

Water quality throughout Yosemite is generally excellent; however, atmospheric deposition of nitrogen may be impacting high elevation areas (Clow 2009). Most surface and subsurface waters have low concentrations of minerals and organic contaminants. The direct input of contaminants into Yosemite's water bodies is small and localized to high-use areas (Clow 2009). Surface water in the park exhibits considerable variability in chemical composition, despite the relative homogeneity of bedrock chemistry (Clow 1996). Surface water in most of the Merced River basin is dilute (i.e., lacking in dissolved solids), making the ecosystem sensitive to human disturbances and pollution (Clow 1996).

Environmental Consequences

Methodology

Scenic vista management activities under the three alternatives could result in changes in sediment loading due to soil disturbance. Scenic vista management actions could disturb soil and lead to sediment loading, which can adversely affect aquatic habitat and biota.

This analysis considers the environmental consequences of implementing the SVMP alternatives based on the potential of each alternative to increase turbidity and contaminants in the park's surface and subsurface waters.

Type of Impact: This analysis identifies impacts as either beneficial or adverse. Impacts are considered beneficial if implementation of an alternative would protect or restore water quality. Impacts are considered adverse if implementation of an alternative would cause water quality in the lakes, rivers, groundwater, or wetlands of the Yosemite region to decline.

Duration of Impact: The duration of an impact is the time required for water quality to return to pretreatment conditions. The duration of water quality impacts is characterized as short-term or long-term. The impact is considered short-term if it takes water quality several hours to return to pretreatment conditions. The impact is considered long-term if it takes longer than several hours for water quality to return to pretreatment conditions.

Intensity of Impact: The intensity of an impact on water quality is a measure of detectable changes in water quality. Impact intensity is characterized as negligible, minor, moderate, or major. Negligible impacts are those that would cause no detectable changes in water quality. Minor impacts would be slightly detectable and localized without the potential to expand if left alone. Moderate water quality impacts would have an adverse effect on wetland habitat or potable water. Major impacts on water quality would be substantial, highly noticeable, and possibly permanent. Major impacts could cause a die-off of a species or result in the loss of ecosystem function.

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. Standardized actions or mitigations to protect hydrology would not apply to vista clearing activities.

Vista clearing activity would continue to be minimal; therefore, existing impacts on hydrology and water quality would be negligible under the No Action alternative.

Cumulative Impacts

Cumulative impacts on hydrology and water quality resources are based on analysis of past, present, and reasonably foreseeable future actions in conjunction with the potential effects of this alternative. Over the past 150 years, activities associated with urbanization in California have contributed to adverse impacts on water flow patterns and water quality. Early agricultural activities in and around Yosemite such as plowing, the keeping of livestock, the ditching of meadows, and mosquito control have adversely impacted hydrology and water quality (Gibbens 1964). The removal of the El Capitan Moraine in 1879 considerably altered Yosemite Valley hydrologic regime. Later factors such as the presence of wastewater treatment facilities, an increase in roads, and an increase in paved areas continue to have an adverse effect due to the alteration of water flow and discharge of effluents. Past flooding, such as the 1997 Merced River flood, has damaged structures, resulting in repairs and reconstruction along the river corridors. Past impacts on hydrology have been major adverse.

Past and continuing small-scale ecological restoration, such as wetland and river restoration projects, have beneficially affected hydrology and water quality. Water quality standards have been legally mandated by the 1972 Clean Water Act. Current road and trail improvement projects such as the Utilities Master Plan, the Tioga Trailheads Project, and the Glacier Point, Wawona, Valley Loop, and Tioga roads rehabilitation projects can temporarily increase the quantity of sediment in adjacent surface waters, but current construction best management practices minimize or eliminate erosion. Road and trail improvements and repairs are often done because of existing erosion problems and therefore would benefit water quality in the long-term. Social trail formation that disturb soil and vegetation due to high levels of visitor use and obscured vistas at some locations adjacent to rivers, streams, lakes, ponds, and other bodies of water can contribute to erosion and negatively impact hydrology and water quality.

Future actions such as the Tuolumne and Merced Wild and Scenic River comprehensive management plans, and the *High Elevation Aquatic Ecosystem Recovery and Stewardship Plan,* would probably provide additional guidelines and protections to benefit hydrology and water quality. Current trends in road rehabilitation projects, ecological restoration projects, visitor use, and regional population growth would likely continue. These current and future efforts could produce localized long-term minor beneficial effects on hydrology and water quality.

Although the previous cumulative impacts on hydrology and water quality have resulted in long-term major adverse impacts, the current trend is toward long-term minor beneficial impacts. The potential effects of the No Action alternative would be negligible when compared with past, present, and reasonably foreseeable future actions, and so the trend of long-term minor beneficial impacts would continue.

Impairment

Because the No Action alternative would produce negligible impacts, Alternative 1 would not impair the park's vegetation hydrology and water quality for future generations.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment. There would be an increase in vista clearing and management under this alternative. Various types of vegetation removal equipment could be used to manage vistas. Management activities could occur adjacent to groundwater, rivers, streams, lakes, ponds, or other bodies of water or inundated areas (including wetland and riparian areas), and could affect hydrology and water quality. The "Actions Common to All Action Alternatives" "Mechanized Equipment Use," "Soils," "Riparian Corridors," and "Mitigations" sections provide a framework for minimizing potential adverse impacts on hydrology and water quality. For example, riparian guidelines limit actions immediately next to rivers and limit the type of vegetation that can be removed. Impacts from Alternative 2 would be short-term adverse negligible to minor.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions and impacts on park hydrology and water quality would be the same as in Alternative 1. Alternative 2 impacts would be minimal compared with past, present, and reasonably foreseeable projects, and would continue the trend toward long-term minor beneficial impacts on hydrology and water quality.

Impairment

Alternative 2 would have short-term localized negligible to minor adverse impacts on hydrology and water quality and would not impair the park's hydrology and water quality for future generations.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas. The integration of ecological conditions under this alternative could benefit wetland hydrologic regimes by placing an emphasis on the composition, structure, and function of vegetation communities. Vista management actions would be similar to those described in Alternative 2. Impacts from Alternative 3 would be short-term adverse negligible to minor.

Cumulative Impacts

Past, present, and reasonably foreseeable actions that impact park hydrology and water quality would be the same as in Alternative 1. Alternative 3 impacts would be minimal compared with past, present, and reasonably foreseeable projects, and would continue the trend toward long-term minor beneficial impacts on hydrology and water quality.

Impairment

Alternative 3 would have short-term localized negligible to minor adverse impacts on hydrology and water quality and would not impair the park's hydrology and water quality for future generations.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

Under Alternative 4, vista clearing activities would take place, using Conventional Professional Team Assessment to prioritize vistas and Scenic Value to determine management actions. Vista management actions would be similar to those described in Alternative 2. Impacts from Alternative 4 would be short-term adverse negligible to minor.

Cumulative Impacts

Past, present, and reasonably foreseeable future park project actions that impact park hydrology and water quality would be the same as in Alternative 1. Alternative 4 impacts would be minimal compared with past, present, and reasonably foreseeable projects, and would continue the trend toward long-term minor beneficial impacts on hydrology and water quality.

Impairment

Alternative 4 would have short-term localized negligible to minor adverse impacts on hydrology and water quality and would not impair the park's hydrology and water quality for future generations.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

Under Alternative 5, vista clearing activities would take place, using Professional Team Assessment to prioritize vistas and Ecological Conditions to determine management actions. The integration of ecological conditions under this alternative could benefit wetland hydrologic regimes by placing an emphasis on the composition, structure, and function of wetland communities. Vista management actions would be similar to those described in Alternative 2. Impacts from Alternative 4 would be short-term adverse negligible to minor.

Cumulative Impacts

Past, present, and reasonably foreseeable future park project actions that impact park hydrology and water quality would be the same as in Alternative 1. Alternative 4 impacts would be minimal compared with past, present, and reasonably foreseeable projects would continue the trend toward long-term minor beneficial impacts on hydrology and water quality.

Impairment

Alternative 4 would have short-term localized negligible to minor adverse impacts on hydrology and water quality and would not impair the park's hydrology and water quality for future generations.

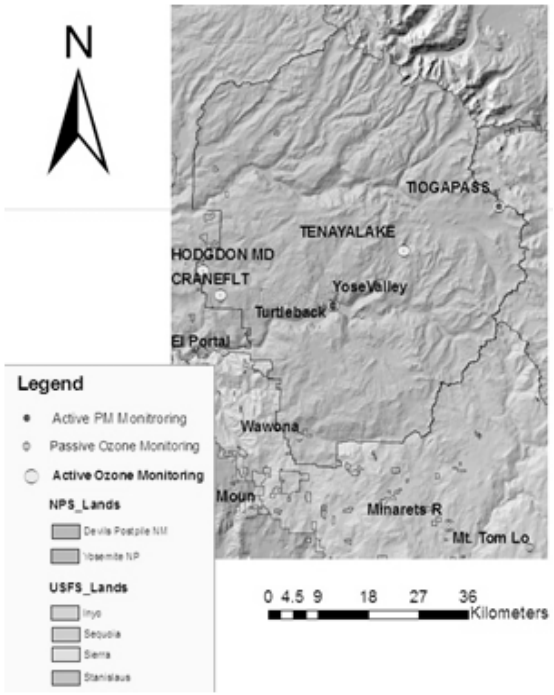

Figure III-2. Air Quality Monitoring Sites in Yosemite (NPS 2004b)

AIR QUALITY

Affected Environment

Yosemite National Park is classified as a mandatory Class I area under the Clean Air Act (42 USC 7401 et seq.). This air quality classification aims to protect national parks and Wilderness areas from air quality degradation. The Clean Air Act gives federal land managers the responsibility of protecting air quality and related values — including visibility, plants, animals, soils, water quality, cultural resources, and public health — from adverse air pollution impacts. The EPA has set national standards for six pollutants: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, and particulate matter less than 10 microns in diameter (PM_{10}). In addition, California has set ambient air quality standards that are stricter than the national standards.

Air pollutants can affect both human health and the ecology of Sierra Nevada landscapes, but human exposure is currently most aggressively protected by federal and state law. From a human health perspective, air quality throughout Yosemite is generally good, with the exception of: 1) spatially localized nighttime smoke accumulation due to prescribed fires, wildland fires, and camp fires; and 2) regionally high ozone in the frontcountry during hot stagnant summer days when upslope winds bring ozone precursors (i.e., nitrogen oxides [NO_x] and volatile organic compounds [VOCs]) into the park from urban sources to Yosemite's west. Asthmatics, people with cardiovascular problems, the elderly, children, and actively exercising individuals are the most vulnerable to these pollutants.

Less is known about ecological impacts of air pollutants in Yosemite, but damage to Jeffrey Pine (*Pinus jeffreyii*), generally at elevations below 6,000 to 7,000 feet on the western slopes of the park, has been well documented for several decades. At another park (i.e., Great Smoky Mountains National Park), evidence also exists that elevated levels of ozone can reduce the ability of a forested watershed to retain moisture, which may have implications for Yosemite's fire regime as climate change in the park continues and water availability during lengthening dry seasons decreases.

Because Yosemite National Park spans three counties (Tuolumne, Mariposa, and Madera), three air pollution control districts (San Joaquin Unified Air Pollution Control District, Mariposa County Air Pollution Control District, and Tuolumne County Air Pollution Control District) regulate the park's air pollution. In concert with the California Air Resources Board, the Mariposa County Air Pollution Control District is responsible for developing and implementing a State Implementation Plan that defines control measures to bring areas into attainment with federal and state air quality standards. These regulations currently focus on human health (the secondary standards protecting ecology are

identical to the primary standards protecting human health). Currently, Mariposa and Tuolumne counties are in attainment, or are unclassified, for all national ambient air quality standards; however, Mariposa County exceeds two California ambient standards: those for ozone (throughout the county) and PM_{10} (in Yosemite Valley). A very small portion of Yosemite's southernmost extent (Madera County) is under the jurisdiction of the San Joaquin Unified Air Pollution Control District, which is also in nonattainment for ozone and PM_{10}.

Both PM and ozone are monitored in several places throughout Yosemite (see Figure III-2), and the assumptions listed in the consequences section below can be periodically compared with these data to ensure that the project is having the predicted impact (or lack thereof) on air quality in Yosemite.

Environmental Consequences

Methodology

This analysis compares the additional potential emissions of the proposed equipment with the other direct PM2.5 sources in the park, with the magnitude of the regional source impacting Yosemite's ozone and PM2.5 background concentrations, and with the impact of any other park activities depending on the concentration of either air pollutant. The type, extent, and intensity of air quality impacts are determined by comparison of the emissions from a given activity with the overall emission inventory of Yosemite National Park, and an elevation of its potential to affect the 8-hour ozone and/or the 24-hour PM standards that are enforced by the air pollution control districts that have jurisdiction in Yosemite National Park.

Analysis for air quality differs slightly from the general analysis in the following areas:

Type of Impact: Types of impact are evaluated as either beneficial or adverse.

Beneficial: Reduce the degree to which air is polluted by reducing emissions.

Adverse: Increase in ozone and PM levels to the point that they exceed federal and state standards.

Intensity of Impact: The intensity of an impact on air quality is based on changes in averages of ozone and PM in periods of 8 and 24 hours.

Negligible: Have no detectable impact on averages of ozone in periods of 8 and 24 hours.

Minor: At the lowest level detectable — a slight "bump up" in hourly ozone or PM concentrations.

Moderate: Have a detectible increase in concentrations of PM and/or ozone over the relevant period of 8 or 24 hours.

Major: Exceeds federal and/or state standards, over the appropriate averaging period.

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. Standardized actions and mitigations would not apply to vista clearing activities. Vista clearing activity would continue to be minimal; therefore, this alternative would produce no change to the current park impact on air quality.

Cumulative Impacts

Since 1950, the population of California has tripled, and the rate of increase in vehicle-miles-traveled has increased sixfold. Air quality conditions within the park have been influenced by this surge in population growth and associated emissions from industrial, commercial, and vehicular sources in upwind areas. Since the 1970s, emissions sources operating within the park, as well as in California as a whole, have been subject to local stationary-source controls and state and federal mobile-source controls. With the passage of time, such controls have been applied to an increasing number of sources, and the associated requirements have become dramatically more stringent and complex.

More recent park actions that have affected park air quality include the FMP, which has called for ongoing fire management activities in the park. These ongoing activities result in short-term regional major adverse impacts on air quality, in which ozone and particulate matter (PM) concentrations are temporarily increased during prescribed burning activities.

The Yosemite Area Regional Transportation System represents a multiagency effort to provide transportation options, reduce reliance on automobiles, and improve regional air quality. Efforts being conducted under this project are expected to result in long-term beneficial impacts on air quality throughout the region. The Yosemite National Park's Shuttle Bus Replacement Project could have a net beneficial effect on air quality. Although the Shuttle Bus Replacement Project would have localized short-term adverse air quality effects, the general goal of the project is to relieve congestion and provide for alternative means of transportation, and it would have a long-term beneficial effect on air quality. Other reasonably foreseeable future NPS projects are not anticipated to have a net adverse or beneficial effect on air quality, except for short-term localized impacts during construction, road rehabilitation projects, and fire management activities.

Although cumulative growth in the region would tend to adversely affect air quality, implementation of ongoing state and federal mobile-source control programs would ameliorate this effect to some extent. With respect to PM, conditions in the Valley would be determined by both regional sources and local sources, and could be beneficial or adverse. Considered with the adverse impacts associated with regional air quality influences, the cumulative projects would have a localized long-term moderate adverse impact on air quality in Yosemite. The No Action alternative would not change these cumulative impacts.

Impairment

Continuing current park practices, Alternative 1 would have no additional impact on air quality. Alternative 1 would not impact air quality for future generations.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment.

This alternative would result in more vistas being reestablished and maintained. Any clearing and thinning for restoring vistas would be done under the overall areas limitations as described in the FMP (NPS 2004b). Vista clearing would require more motorized equipment use than would typically be necessary strictly for fire management. The FMP has an estimate for 1,100 acres in motorized and

mechanical clearing to be done per year. This alternative would, at a maximum, double that area; if the maximum clearing limits of 100m width by 1 km lengths (to mid ground) were done at each site (approximately 25 acres) and the combined area for forty vista sites per year, it would amount to 1,000 acres of clearing per year. A few sites may require the maximum limits, but many would require only one or fewer acres of clearing. Reasonable estimates of annual work load would be closer to thirty sites per year. If estimates of motorized equipment use in the FMP were to double, the emissions would still be minor when compared with those from wildland fire (see Tables III-7 and III-8).

This alternative would require more motorized clearing, but given the much larger sources of direct particulate matter (PM) emissions (i.e., $1/1000^{th}$ the size of the planned fire emissions), differences in PM levels would probably be undetectable, even next to the area of activity, since measurement error for most particle monitoring devices is +/- 1-5%. Any prescribed burning or clearing done to benefit vistas would be done under the FMP plan, with no additions or subtractions made.

Ozone precursors emitted by the increased activity would require several hours to be converted to ozone. During this time, precursors would be transported and dispersed miles downwind. These emissions are a smaller fraction of the total regional background that creates the Yosemite ozone issues, so there is less of a chance of extra ozone being created from these activities in the park. The most likely outcome would be a slight (and probably unmeasurable) reduction in ozone concentration at the site emission under the most stagnant conditions due to the ability of NO (nitrogen monoxide, the primary pollutant emitted by combustion engines, to be subsequently converted to NO_2 [nitrogen dioxide], the sum of which constitutes NOx [nitrogen oxides]) to "titrate" with existing ozone to reduce ozone concentrations.

Ozone and PM concentrations would be temporarily increased during vista management activities associated with both mechanical vegetation removal and prescribed burning. Adverse effects of this action alternative would be localized short-term minor to moderate. Emissions increases associated with vegetation removal equipment use would be highly localized short-term negligible. Emissions increases as a result of prescribed burning would be less localized short-term detectable. Overall, impacts on park air quality would be short-term localized minor to moderate, but negligible over the long-term.

Table III-7. Average prescribed burn estimated emissions for all Action Alternatives for the years 2003-2004 (Final Yosemite Fire Management Plan 2004)

All Action Alternatives						
	Acres Burned	**Emissions (tons/year) [a]**				
		PM_{10}	**$PM_{2.5}$**	**VOC**	**CO**	**CO_2**
Historical Average	1,495	1,087	917	719	12,945	58,557
Alternative D Average	9,762	7,726	6,538	4,394	88,501	412,376
Potential Increase in All Action Alternatives	**8,267**	**6,639**	**5,621**	**3,675**	**75,556**	**353,819**

a PM_{10} = Suspended Particulate, $PM_{2.5}$ = Fine Particulate Matter, VOC = volatile organic compounds, CO = Carbon Monoxide, NOx = Nitrogen Oxides, CO_2 = Carbon Dioxide

Table III-8. Air emissions associated with mechanical thinning activities for all Action Alternatives (Final Yosemite Fire Management Plan 2004)

All Action Alternatives							
Equipment	Operating Hours	Motorized Equipment Emissions (tons/yr) [a]					
		PM_{10}	$PM_{2.5}$	VOC	CO	NO_X	CO_2 [b]
Chain saws	11,312	0.29	0.29	5.97	19.37	0.07	ND
Chippers	2,155	0.46	0.46	0.20	28.80	0.02	ND
Feller-Bunchers	259	0.07	0.07	0.12	0.57	0.38	ND
Skidders	259	0.07	0.07	0.12	0.57	0.38	ND
Haul Trucks	777	0.22	0.22	0.37	1.70	1.14	ND
ATV Skidders	150	0.0	0.0	0.03	2.29	0.02	ND
Total		**1.11**	**1.11**	**6.81**	**53.30**	**2.01**	**ND**

a PM_{10} = Suspended Particulate, $PM_{2.5}$ = Fine Particulate Matter, VOC = volatile organic compounds as methane, CO = Carbon Monoxide, NOx = Nitrogen Oxides, CO_2 = Carbon Dioxide

b No data

Cumulative Impacts

Past, present and reasonably foreseeable future park project actions that impact park air quality would be the same as in Alternative 1. Additional emissions of this alternative, when compared with the much larger emissions associated with other plans, would have a negligible (unmeasurable) impact on air quality, impacts that can be characterized as localized negligible (not measurable or attributable to sources in question) adverse (but not measurably so) short-term. The cumulative projects would have a localized long-term moderate adverse impact on air quality in Yosemite. Alternative 2 would not change these cumulative impacts.

Impairment

Alternative 2 would not impact air quality for future generations, as these NAAQS air pollutants of this nature do not persist in the environment. Alternative 2 would not impair the resource.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas.

This alternative would be subject to the same clearing actions and impacts as described in Alternative 2. Air quality would be temporarily affected due to increased air emissions from the use of vegetation removal equipment. Emissions increases associated equipment use would be highly localized short-term slightly detectable. Prescribed burning for vista management would comply with any overall area

limitations set under the FMP, so would not add to emissions previously analyzed. Overall, impacts on park air quality would be short-term localized minor to moderate, but negligible over the long term.

Cumulative Impacts

Past, present and reasonably foreseeable future park project actions that impact park air quality would be the same as in Alternative 1. Additional emissions of this alternative, when compared with the much larger emissions associated with other plans, would thus have a negligible (unmeasurable) impact on air quality, impacts that can be characterized as localized negligible (not measurable or attributable to sources in question) adverse (but not measurably so) short-term. The cumulative projects would have a localized long-term moderate adverse impact on air quality in Yosemite. Alternative 3 would not change these cumulative impacts.

Impairment

Alternative 3 would not impact air quality for future generations, as these NAAQS air pollutants of this nature do not persist in the environment. Alternative 3 would not impair air quality.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

Under Alternative 4, vista clearing activities would take place, using Professional Team Assessment to prioritize vistas and Scenic Value to determine management actions. This alternative would be subject to the same clearing actions and impacts described in Alternative 2. Air quality would be temporarily affected due to increased air emissions from vegetation removal equipment use. Emissions increases associated with vegetation removal equipment use would be short-term slightly detectable highly localized. Prescribed burning for vista management would comply with any overall area limitations set under the FMP, so would not add to emissions previously analyzed. Overall, impacts on park air quality would be short-term localized minor to moderate, and negligible over the long-term.

Cumulative Impacts

Past, present, and reasonably foreseeable future park project actions that impact park air quality would be the same as in Alternative 1. Additional emissions of this alternative, when compared with the much larger emissions associated with other plans, would thus have negligible (unmeasurable) impacts on air quality, impacts that can be characterized as localized negligible (not measurable or attributable to sources in question) adverse (but not measurably so) short-term. The cumulative projects would have a local long-term moderate adverse impact on air quality in Yosemite. Alternative 4 would not change these cumulative impacts.

Impairment

Alternative 4 would not impact air quality for future generations, as these NAAQS air pollutants of this nature do not persist in the environment. Alternative 4 would not impair air quality.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

Under Alternative 5, vista clearing activities would take place, using Professional Team Assessment to prioritize vistas and Ecological Conditions to determine management actions. This alternative would be subject to the same clearing actions and impacts described in Alternative 2. Air quality would be temporarily affected due to increased air emissions from vegetation removal equipment use. Emissions increases associated with vegetation removal equipment use would be short-term slightly detectable highly localized. Prescribed burning for vista management would comply with any overall area limitations set under the FMP, so would not add to emissions previously analyzed. Overall, impacts on park air quality would be short-term localized minor to moderate, and negligible over the long-term.

Cumulative Impacts

Past, present, and reasonably foreseeable future park project actions that impact park air quality would be the same as in Alternative 1. Additional emissions of this alternative, when compared with the much larger emissions associated with other plans, would thus have a negligible (unmeasurable) impact on air quality, impacts that can be characterized as localized, negligible (not measurable or attributable to sources in question), adverse (but not measurably so), and short-term. The cumulative projects would have a localized long-term moderate adverse impact on air quality in Yosemite. Alternative 5 would not change these cumulative impacts.

Impairment

Alternative 5 would not impact air quality for future generations, as these NAAQS air pollutants of this nature do not persist in the environment. Alternative 5 would not impair air quality.

NATURAL QUIET

Affected Environment

Natural sounds are an important value at Yosemite National Park for visitors enjoying the booming of the waterfalls or the view of Half Dome. Sounds near the Yosemite Pioneer History Center and other historic or archeological districts in the park help transport visitors to earlier times. But many species of wildlife depend on natural quiet to hear and be heard to find mates, hunt, defend territories, or warn (or be warned) of danger. Some natural sounds in the natural soundscape are also part of the biological or other physical resource components of the park. Examples of natural sounds produced by wildlife include sounds made by various species to define territories, attract mates, locate prey, navigate, and detect and avoid predators or other dangers. Examples of such natural sounds produced by physical processes include wind in the trees, claps of thunder, and falling water.

Noise is defined as a human-caused sound that is considered unpleasant and unwanted above the natural quiet— for example, a motorcycle heard above sound of Yosemite Falls, a cell phone ringing on the top of Half Dome, or a chain saw running in the Yosemite Pioneer History Center. Whether a noise is considered pleasant or unpleasant depends on the individual listening to the sound, the setting, and what the individual is doing when the sound is heard (e.g., working, playing, resting, or sleeping). Natural sounds within Yosemite are part of the natural quiet.

Sound levels in Yosemite National Park vary by location and by season. The sound environment of alpine (i.e., above treeline) areas of the park is very different from that in deep canyons such as Yosemite Valley, which is again very different from old growth red fir forests with large, widely spaced trees. The sound environment in spring of many areas of the park, particularly Yosemite Valley, is dominated by the sound of running water and waterfalls, which is very different from early fall, when water levels are at their lowest and many of the streams have dried up. Noise levels are also influenced by the number of visitors and park operations, which are strongly correlated, and by atmospheric effects such as wind, temperature, humidity, topography, rain, fog, and snow.

Sound and noise levels are measured in units known as decibels (dB). For the purpose of this analysis, sound and noise levels are expressed in decibels on the A-weighted scale (dBA). This scale most closely approximates the response characteristics of the human ear to low-level sound. Human hearing ranges from the threshold of hearing (0 dBA) to the threshold of pain (140 dBA). Environmental sound or noise levels typically fluctuate over time, and different types of noise descriptors are used to account for this variability. One of these descriptors is the day-night average noise level, which reflects the noise level averaged over a 24-hour period.

Existing Noise Sources

The primary sources of noise in the park are vehicles, aircraft, park operations, and park visitors. This list of sources is not intended to be exhaustive, and these sources are not mutually exclusive.

Vehicle noise is most noticeable at locations with a concentration of park visitors, heavy vehicle traffic, and topography that either places visitors in close proximity to roads or allows sound to travel long distances. The existing noise environment changes dramatically throughout the year, directly in proportion to the level of use (e.g., the number of cars, buses, motorcycles, and other vehicles that travel the various roadways in the park); therefore, noise levels are generally lower during the winter than during the busy summer months. Vehicle noise is very noticeable in Yosemite Valley and along road corridors such as the Big Oak Flat Road and Tioga Road.

Aircraft is a substantial source of noise in the park, particularly high altitude commercial jet traffic. Aircraft noise is not as noticeable in Yosemite Valley, where vehicle noise dominates, but it is far more noticeable in wilderness areas and in the higher elevations of the park. Two major commercial jet “highways” cross over Yosemite: one east-west route and one north-south route. Other types of aircraft include military planes (some of which are very loud), commercial air tours, recreational flights, and helicopters that provide operational support to the park.

Park operations, including visitor services provided by concessioners, generate a myriad of activities that produce noise. Many facilities provide visitor services, ranging from hotels and restaurants to sewer plants and roads. Constructing, rebuilding, or maintaining these facilities can generate noise through service vehicles, generators, chain saws, vacuums, garbage trucks, and so forth. Hazard tree management generates noise through the use of chain saws, wood chippers, stump grinders, and heavy equipment, often in the direct vicinity of visitor use facilities.

Park operations not related to facilities include shuttle bus service, emergency medical services, search and rescue activities, law enforcement patrol, fire management, interpretive walks, wildlife management, invasive plant management, and research activities.

Some noise can be attributed directly to visitors, as opposed to attributed indirectly to visitors via the services provided to them. In addition to the noise sources previously mentioned, additional sources of noise include visitors using their voices, riding their bikes, barbecuing at campsites, listening to music at picnic areas, calling to each other while climbing El Capitan, and accidentally setting off car alarms.

Sound data were collected in 2005 and 2006 in various areas of the park, generally in areas where road noise could not be heard, but also in a few developed areas such as Yosemite Village. The results of the analysis of these data show that human-caused sounds were audible 89.3% of the time in Yosemite Village, the noisiest sampling location, but only 12.3% of the time at Harden Lake near White Wolf, the quietest sampling location. At Yosemite Village, aircraft could be heard only 2.4% of the time, compared with 12.1% of the time at Harden Lake (Fritstrup, Joyce, Lynch, and Pilcher 2006).

Environmental Consequences

Methodology

Impacts related to noise were assessed in terms of duration, type, and intensity of impact, as discussed below. Unless otherwise noted, local impacts were considered to be those that occur in the immediate vicinity of an action, or in a nearby area indirectly affected by the action.

Duration of Impact: Short-term impacts are temporary impacts that typically occur during construction activities. Long-term impacts are impacts that continue to occur after construction, typically last ten years or more, and are considered permanent changes.

Intensity of Impact: The level of impact (negligible, minor, moderate, or major) of sound changes from the No Action alternative to the Action Alternatives was evaluated using the following definitions. A negligible impact indicates that the change in sound levels would not be perceptible. A minor impact indicates that the change in sound levels would be perceptible, but not likely to have a substantial annoyance effect on visitors or residents in the area. A moderate impact indicates that the change in sound levels would be easily perceptible and likely to result in annoyance to some park visitors and residents. A major impact indicates that the change in sound levels would be very perceptible and likely to annoy most park visitors and residents who experience it.

Type of Impact: Beneficial impacts are those impacts that result in less noise; adverse impacts are those impacts that result in more noise.

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. Standardized mitigations to protect the park's natural soundscapes would not apply to vista clearing activities. Vista clearing activity would continue to be minimal; therefore, there would be a localized short-term minor to moderate adverse impact on Natural quietand natural soundscapes within the project area.

Cumulative Impacts

Cumulative impacts are based on analysis of past, present, and reasonably foreseeable future actions in Yosemite National Park, along with the potential effects of this alternative. Past park actions that have

contributed to noise within the project area include the construction of park roads and other infrastructure, increased visitor use, and increased motorized vehicle transportation. These activities have adversely affected the natural soundscapes (i.e.: water, wildlife, and wind sounds) and adversely impact wildlife and visitors' experience.

Current road and trail improvement projects such as the Tioga Road and Generals Highway Rehabilitations, the Utilities Master Plan, and the Yosemite Institute Environmental Education Campus contribute to increased park noise levels while construction activities take place. Continuing park operation activities such as hazardous tree removal and prescribed fire management increase the noise level in the vicinity of operations. These activities are likely to continue. Projected regional population growth will probably add visitor use and motorized vehicle traffic to the park, which will add to localized adverse impacts.

Past, present, and reasonably foreseeable future actions adversely impact natural quiet, but typically are localized minor to moderate short-term. Vista management under this alternative would be minimal and would not significantly contribute to park noise levels within the project area. Current cumulative impacts would likely continue.

Impairment

Alternative 1 would not impair the park's natural sounds for future generations.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. Under this alternative, there would be an increase in vista clearing and management. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment, and initial clearing would take place at a rate of about thirty sites annually. Because of mitigations, vista management actions would probably take place during limited times of the year (see "Wildlife Mitigations" and "Visitor Use" sections in Chapter II).

Work done by crews could include prescribed burning, as well as the use of heavy equipment and hand-held motorized tools. One of the main motorized hand tools used is the chain saw. Chain saws emit about 110-113 decibels on the A-weighted scale (dBA), depending on power level. The use of such hand-held motorized tools would contribute to increased noise levels in the park.

Clearing actions would increase noise levels in the short-term with minor to moderate adverse impacts on natural quiet. Continued site maintenance over the long-term would also have adverse impacts that would be minor to moderate, but would probably be shorter in duration, and the use of chain saws would not always be necessary.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that impact natural quiet would be the same as in Alternative 1.There would be an increase in vista management activities that contribute to noise levels in the short-term, but the impacts would be short-term localized. Alternative 2 would not significantly alter the cumulative impacts, which would continue to be adverse localized short-term minor to moderate.

Impairment

Alternative 2 would cause short-term localized minor to moderate adverse impacts on the natural quiet. Alternative 2 would not impair the park's natural sounds for future generations.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas at a rate of about thirty per year. Vista management actions and impacts would be similar to those described in Alternative 2. Fewer sites would be considered when compared with other alternatives, reducing the potential to impact certain sites removed for ecological considerations. Short-term minor to moderate adverse localized impacts on the natural quiet would occur.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that impact natural quiet would be the same as in Alternative 1.There would be an increase in vista management activities that contribute to noise levels in the short-term, but the impacts would be short-term localized. Alternative 3 would not significantly alter the cumulative impacts, which would continue to be adverse localized short-term minor to moderate.

Impairment

Alternative 3 would cause short-term localized minor to moderate adverse impacts on the natural quiet. Alternative 3 would not impair the park's natural sounds for future generations.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

Under Alternative 4, vista clearing would take place, using Professional Team Assessment to prioritize vistas and Scenic Value to determine management actions. Vista management actions and impacts would be similar to those described in Alternative 2. Approximately 181 sites would be considered for vista management, and initial clearing would occur at a rate of about 30 sites annually. This is the least restrictive action alternative and could impact noise levels at a greater number of sites. Overall, however, impacts on natural quiet would also probably be short-term minor to moderate localized.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that impact natural quiet would be the same as in Alternative 1.There would be an increase in vista management activities that contribute to noise levels in the short-term, but the impacts would be short-term localized. Alternative 4 would not significantly

alter the cumulative impacts, which would continue to be adverse localized short-term minor to moderate.

Impairment

Alternative 4 would cause short-term localized minor to moderate adverse impacts on the natural quiet. Alternative 4 would not impair the park's natural sounds for future generations.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

Under Alternative 5, vista clearing activities would take place, using Professional Team Assessment to prioritize vistas and Ecological Conditions to determine management actions. Vista management actions would be the same as those described in Alternative 2. Approximately 167 sites would be considered for vista management, and initial clearing would occur at a rate of about 30 sites annually. Overall, impacts on natural quiet would likely be short-term minor to moderate localized.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions that impact natural quiet would be the same as in Alternative 1.There would be an increase in vista management activities that contribute to noise levels in the short-term, but the impacts would be short-term localized. Alternative 5 would not significantly alter the cumulative impacts, which would continue to be adverse localized short-term minor to moderate.

Impairment

Alternative 5 would cause short-term localized minor to moderate adverse impacts on the natural quiet. Alternative 5 would not impair the park's natural sounds for future generations.

GEOLOGIC HAZARDS

Affected Environment

The dramatic and famous scenes of Yosemite are principally the result of geological processes that formed the high granite walls in Yosemite. The Sierra Nevada is an enormous deposit of granite. This area is a product of the deposition and formation of sedimentary rock over hundreds of millions of years with the intrusion of granite rocks, followed by the uplift, erosion, and glaciations of the environment to form today's landscape (Huber 1989). There have been three major glacial periods. The last period began approximately 60,000 years ago and reached the maximum extent in Yosemite about 20,000 years ago near Bridalveil Meadow.

The vista management plan could affect geology by clearing vegetation, mainly trees, at the base of geologic formations prone to rockfall. Yosemite National Park has defined certain areas as "Geologic Hazard Zones" and seeks to minimize time that staff and visitors are exposed to the potential hazard.

A rockfall is a rock fragment detached by sliding, toppling, or falling, that falls along a vertical or sub-vertical cliff and proceeds down slope by bouncing and flying along ballistic trajectories or by rolling on talus or debris slopes (Varnes 1978; Cruden and Varnes 1996). The distance that falling rocks extend from the base of cliffs is strongly dependent on the amount of kinetic energy involved (Erisman and Abele, 2001). Trees and other vegetation serve to dissipate the kinetic energy of falling rocks, primarily as tree trunks and plant stems are broken by impacts from bouncing or rolling rock fragments (Dorren 2005, 2006). Trees and other vegetation also serve to intercept smaller-diameter rock fragments (flyrock) that could otherwise travel through the air unimpeded for long distances. Thus, maintaining "protection forests" at the base of rockfall-prone cliffs can be an effective means of mitigating rockfall hazard and risk for developed areas adjacent to those cliffs (Dorren 2004, 2005; Stokes 2005).

There are many examples of dissipation of rockfall energy by trees and other vegetation in Yosemite Valley (Wieczorek and Snyder 2004). Accurate hazard and risk assessment in Yosemite Valley requires specific knowledge of the extent of tree and vegetation cover; simulations of potential future rockfall runout in Yosemite Valley are influenced by the roughness of the topography, which includes trees and other vegetation (Guzzetti 2003; Wieczorek 2008).

Given the importance of trees and other vegetation as potential protective cover from rockfalls, vegetation management as part of the vista management plan would include site-specific information on rockfall hazard and risk, and assessment of the potential for increasing rockfall hazard and risk by removing trees or vegetation on or adjacent to talus slopes. This assessment would be conducted by physical science staff (primarily the park geologist) in Resources Management and Science familiar with these issues.

Environmental Consequences

Methodology

Geologic hazard zone evaluation examines the risk of rock fall that park resources, staff and visitors could be exposed to due to actions taken under the SVMP. Rockfall risk is evaluated by examining the likelihood of rockfall occurrence that could harm resources or people.

Type of Impact: Beneficial impacts are those impacts that result in decreased risk of rockfall, and adverse impacts are those impacts that result in increased risk of geologic hazards to park visitors and staff.

Duration of Impact: Impact duration refers to the length of time that a change in rockfall risk exists. Impact duration is categorized as short-term or long-term. Rockfall risk is considered short-term if the level of risk returns to the level it maintained before actions took place in less than 20 years. Rockfall risk is considered long-term (or permanent) if it takes more than 20 years for the level of risk to return to its previous status.

Intensity of Impact: Impact intensity is measured by the number of staff, visitors, and park resources likely to be affected by the exposure to rockfall. Impact intensity is categorized as negligible, minor, moderate, or major.

Negligible rockfall risk impacts on geologic hazard zones would be slightly detectable. A negligible impact would result, for example, if less than 20 trees over 12" dbh were cleared for a single vista in a geologic hazard zone that is minimally traveled or inaccessible to visitors or staff.

Minor rockfall risk impacts on geologic hazard zones would be perceptible. An example of a minor impact would be if more than 20 trees over 12" dbh were cleared in a geologic hazard zone of moderate staff and visitor use.

Moderate rockfall risk impacts on geologic hazard zones would change the effect on park staff and visitors on a regularly occurring basis in a very limited area. An example of a moderate impact would be if more than 20 trees higher than 12" dbh were cleared in an area of high staff and visitor use.

Major rockfall risk impacts on geologic hazard zones would affect park staff and visitors on a regular basis at a given location. An example of a major impact would be if more than an acre of trees were cleared in an area of high staff and visitor use.

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. Standardized mitigations to protect park staff, visitors, and resources from rockfall would not apply to vista clearing activities. Maximum widths and depths for vista clearing would not be specified. Vista clearing activity would continue to be minimal; therefore, there would be a localized long-term minor adverse impact on rockfall risk at managed vista sites.

Cumulative Impacts

Cumulative impacts on geologic hazard zones as a result of increased rockfall risk are based on analysis of past, present, and reasonably foreseeable future actions in Yosemite National Park, along with the potential effects of this alternative.

The threat of geologic hazards in Yosemite National Park has been addressed for many years through increased statewide building codes and a greater awareness of the threat, although these efforts have principally addressed earthquake risk and not rockfall risk. Past significant rockfalls in the park over the past two decades include the 1987 Middle Brother, 1996 Happy Isles, 2008 Curry Village, and 2009 Ahwiyah Point rockfalls. While these rockfalls were of varying size and were located in geologic hazard zones with varying amounts of visitor use and park resources, all resulted in significant impacts. The Middle Brother and Happy Isles rockfalls were both large in volume and occurred in high visitor use areas. Park staff, visitors, and resources, such as roads and structures, were impacted, resulting in short-term closures of these areas. The 2008 Curry Village rockfall, although smaller in volume, destroyed and damaged several structures, and resulted in minor injuries to park visitors. Because this event occurred in a localized area with high visitor use during peak visitation hours, long-term closure of the area resulted. The 2009 Ahwiyah Point rockfall was much larger in volume and occurred over a larger area. Rockfall impact knocked down hundreds of trees and buried hundreds of feet of trail, and generated ground shaking equivalent to a magnitude 2.4 earthquake. Park staff, visitors, and resources were not affected, as the rockfall occurred in an area of considerably less visitor use during off-visitation hours. Indefinite closure of the area resulted due to the debris and trail coverage. These past significant rockfalls have spurred more thorough investigations of areas of significant rockfall risk. Geologic hazard zones have been delineated; all occupied structures that are within such areas have been abandoned, and visitor use has been discouraged. Cumulative impacts of past rockfall events in geologic hazard zones within the project area have been long-term adverse minor to moderate .

Present plans and projects that call for actions that could impact the risk of rockfall on park visitors, staff, and resources in geologic hazard zones include: the Tuolumne and Merced Wild and Scenic River

comprehensive management plans, the *Utilities Master Plan*, Curry Village Rockfall Hazard Zone Structures Project, *Ahwahnee Comprehensive Rehabilitation Plan, Commercial Use Authorizations for Commercial Activities*, and road rehabilitation projects. Current road and trail improvement projects that occur within geologic hazard zones could increase the risk of rockfall impact for park staff, visitors, and resources, but there is a trend to avoid hazard zones and move visitors, staff, and resources out of geologic hazard zones; this trend would have a beneficial localized minor to moderate impact.

The trend toward decreased risk of rockfall to park visitors, staff, and resources in geologic hazard zones would probably continue, although increased visitor use could increase the possibility of a park visitor or staff member's being in a rockfall hazard zone at any given time. Rockfalls are a natural and dynamic geologic process in the park, and rockfall events within geologic hazard zones can occur. Yosemite Valley experiences many rockfalls each year due to its steep, glacier-carved cliffs.

Although past impacts have been long-term adverse minor to moderate, the trend of present and future actions would likely reduce this risk. The No Action alternative would likely have only a minor effect on rockfall risk in geologic hazard zones when compared with cumulative impacts, and this trend would likely continue.

Impairment

Alternative 1 would allow the natural process to occur and therefore would not impair park geology.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. Vista clearing and management in the park would increase under this alternative. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment, continuing at a rate of about 30 sites annually. Using scenic value to determine management intensity may allow for more aggressive removal of vegetation, which could increase rockfall risk slightly in geologic hazard zones.

Trees located in geologic hazard zones could be removed. Any trees called for removal inside of a geologic hazard zone, specifically those that would likely buffer the impact of a rockfall, would have to be approved by the park geologist. Increased visitor use in geologic hazard zones could be a result of vista clearance. No vistas would be cleared if they were significantly located within geologic hazard zones. Vista management under Alternative 2 could result in localized negligible increased risk of rockfall impact on park staff, visitors, and resources in geologic hazard zones.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions and impact would be the same as in Alternative 1. Although past impacts have been long-term adverse minor to moderate, the trend of present and future actions would likely reduce this risk. Alternative 2 would likely have only a minor affect on rockfall risk in geologic hazard zones when compared with cumulative impacts, and this trend would likely continue.

Impairment

Alternative 2 would allow the natural process to occur and therefore would not impair park geology.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas at a rate of about 30 sites annually. Vista management actions and impact would be similar to those described in Alternative 2. The removal of trees associated with vista clearing could slightly increase rockfall risk in geologic hazard zones. Localized adverse negligible increased risk of rockfall impact on park staff, visitors, and resources could result.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions and impact would be the same as in Alternative 1. Although past impacts have been long-term adverse minor to moderate, the trend of present and future actions would likely reduce this risk. Alternative 3 would likely have only a minor effect on rockfall risk in geologic hazard zones when compared with cumulative impacts, and this trend would likely continue.

Impairment

Alternative 3 would allow the natural process to occur and therefore would not impair park geology.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

Under Alternative 4, vista clearing activities would take place, using Professional Team Assessment to prioritize vistas and Scenic Value to determine management actions. Park staff would clear and maintain about 181 obscured or partially obscured vistas at a rate of about 30 annually. Vista management actions and impact would be similar to those described in Alternative 2. This alternative would likely allow more clearing and actions, which could slightly increase rockfall risk in geologic hazard zones compared with other action alternatives. Overall, however, localized adverse negligible to minor increased risk of rockfall impact on park staff, visitors, and resources could be present.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions and impact would be the same as in Alternative 1. Although past impacts have been long-term adverse minor to moderate, the trend of present and future actions would likely reduce this risk. Alternative 4 would likely have only a minor affect on rockfall risk in geologic hazard zones when compared with cumulative impacts, and this trend would likely continue.

Impairment

Alternative 4 would allow the natural process to occur and therefore would not impair park geology.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

Under Alternative 5, vista clearing activities would take place, using Professional Team Assessment to prioritize vistas and Ecological Conditions to determine management actions. Park staff would clear and maintain about 167 obscured or partially obscured vistas at a rate of about 30 sites annually. Vista management actions and impact would be similar to those described in Alternative 2. Localized adverse negligible increased risk of rockfall impact on park staff, visitors, and resources could be present.

Cumulative Impacts

Past, present, and reasonably foreseeable future actions and impact would be the same as those described in Alternative 1. Although past impacts have been long-term adverse minor to moderate, the trend of present and future actions would likely reduce this risk. Alternative 5 would likely have only a minor effect on rockfall risk in geologic hazard zones when compared with cumulative impacts, and this trend would likely continue.

Impairment

Alternative 5 would allow the natural process to occur and therefore would not impair park geology.

GLOBAL CLIMATE CHANGE

Affected Environment

This section will focus on the potential of scenic vista management to generate greenhouse gasses (GHGs) that contribute to global climate change. The NPS is examining ways in which global climate change could impact the National Park system because climate change will likely have impact on forest stand structure and composition across forests worldwide. However, during the expected life of this plan, these changes to forest structure and composition will not likely be significant.

Greenhouse Gas Overview

Gases that trap heat in the atmosphere are often called greenhouse gases (GHGs). Emissions of greenhouse gases into Earth's atmosphere contribute to global climate change. Some GHGs such as carbon dioxide occur naturally and are emitted into the atmosphere through natural processes and human activities (US EPA 2010). Other GHGs (e.g., fluorinated gases) are created and emitted solely

through human activities. The principal GHGs that enter the atmosphere because of human activities are:

Carbon Dioxide (CO_2): Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and as a result of other chemical reactions (e.g., the manufacturing of cement). Carbon dioxide is also removed from the atmosphere (or "sequestered") when it is absorbed by plants as part of the biological carbon cycle.

Methane (CH_4): Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and from the decay of organic waste in municipal solid waste landfills.

Nitrous Oxide (N_2O): Nitrous oxide is emitted during agricultural and industrial activities, as well as during the combustion of fossil fuels and solid waste.

Fluorinated Gases: Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted as a result of a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (e.g., CFCs, HCFCs, and halons). These gases typically are emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases ("High GWP gases") (US EPA 2010).

For the purposes of this environmental assessment, only CO_2 and N_2O are examined, as they are the only GHGs that could be emitted as a result of proposed actions under the SVMP.

Scientific Studies

A series of reports issued by the United Nations Intergovernmental Panel on Climate Change (UNIPCC) has synthesized the results of recent scientific studies on climate change (UNIPCC 2000c, 2007a, 2007b). Key findings of these reports are listed below.

- Global atmospheric concentrations of carbon dioxide, methane, and nitrous oxide have increased markedly as a result of human activities since 1750, and now far exceed preindustrial levels. Global increases in carbon dioxide concentration are due primarily to fossil fuel use and land use change, and global increases in methane and nitrous oxide are due primarily to agriculture.
- Warming of the global climate due to greenhouse gases (GHGs) is unequivocal, as evidenced by increases in air and water temperatures, widespread melting of snow and ice, and rising global average sea level. Most of the increase in global average temperatures since the mid-20th century is very likely due to increases in GHGs from human activities. GHG emissions increased 70% between 1970 and 2004.
- Numerous long-term climate changes observed have included changes in Arctic temperatures and ice, precipitation, ocean salinity, wind pattern, and the frequency of extreme weather events such as droughts, heavy precipitation, heat waves, and tropical cyclone intensity.
- Continued GHG emissions at current rates would cause further warming and climate change during the 21st century that would very likely be larger than that observed in the 20th century.
- Climate change is expected to have adverse impacts on water resources, ecosystems, food and forest products, coastal systems and low-lying areas, urban areas, and public health. These impacts would vary regionally.

California GHG Emissions and Climate Change

In California, the main sources of GHG emissions are in the transportation and energy sectors. According to the California Air Resources Board (ARB) draft GHG emission inventory for the year 2004, 39% of GHG emissions result from transportation, and 25% of GHG emissions result from electricity generation. California produced 497 million metric tons of CO_2 equivalent (MMt CO_2 e) in 2004 (ARB 2007). California produces about 2% of the world's GHG emissions.

The potential effects of future climate change on California resources include (California Climate Change Portal [CCCP] 2007):

- air temperature: increases of 3 to 10.4 degrees Fahrenheit by the end of the century, depending on the aggressiveness of GHG emissions mitigation;
- sea level rise: 6 to 30 inches by the end of the century, depending on the aggressiveness of GHG emissions mitigation;
- water resources: reduced Sierra snowpack, reduced water supplies, increased water demands, and changed flood hydrology;
- forests: changed forest composition, geographic range, and forest health and productivity;
- ecosystems: changed habitats, increased threats to certain endangered species;
- agriculture: changed crop yields, increased irrigation demands; and
- public health: increased respiratory illness and weather-related mortality.

Yosemite National Park Climate Action Plan

Yosemite National Park participates in the Climate Friendly Parks Program implemented by the U.S. Environmental Protection Agency (EPA) and the NPS, and has been designated a "Climate Friendly Partner." To obtain this designation, Yosemite has conducted a baseline GHG emissions inventory, developed a *Climate Action Plan* (Yosemite National Park 2006), and committed to educating park staff, visitors, and community members about climate change.

In 2005, Yosemite's GHG emissions from activities other than fire management totaled more than 16,000 MMtCO2e. Of this total, 64% was caused by mobile combustion, 21% by stationary combustion, and 10% by purchased electricity, with the remainder caused by other sources.

The objective of Yosemite's *Climate Action Plan* is to identify actions that Yosemite can undertake to reduce GHG emissions and thus address climate change. A specific goal is to reduce GHG emissions resulting from activities other than fire management to 10% below 2005 levels by 2010 through implementing emission mitigation actions. The Plan recommends three strategies:

- reduce fuel use and GHG emissions from park facilities and operations;
- increase climate change outreach and education efforts; and
- perform subsequent emission inventories to evaluate progress and develop future emission mitigation actions.

Environmental Consequences

Methodology

For the purposes of this environmental assessment, only CO_2 and N_2O are examined, as they are the only GHGs that could be emitted as a result of proposed actions under the SVMP. Sources of CO_2 and N_2O GHG emissions for the alternatives are the same as those stated in the "Air Quality" section. GHG

emissions for the alternatives have not been quantified because they represent a small proportion of parkwide emissions.

Type of Impact: Types of impact associated with GHG emissions are evaluated as either beneficial or adverse.

Beneficial: Reduce the degree to which air is polluted by reducing GHG emissions.

Adverse: Increase GHG emission levels to the point that they exceed federal and state standards.

Intensity of Impact: The intensity of an impact on global climate change is based on levels of GHGs produced and emitted due to vista management activities.

Negligible: No detectable GHG emissions.

Minor: Lowest detectable levels of GHG emissions (slightly detectable).

Moderate: Detectable levels of GHG emissions.

Major: Emission levels exceed federal and/or state standards.

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. This alternative would produce negligible change to the current park impact on GHG emissions.

Cumulative Impacts

Global atmospheric concentrations of GHGs such as carbon dioxide, methane, and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed preindustrial levels. Global increases in carbon dioxide concentration are due primarily to fossil fuel use and land use change, and global increases in methane and nitrous oxide are due primarily to agriculture. Since 1950, the population of California has tripled, and the rate of increase in vehicle-miles-traveled has increased sixfold. This surge in population growth has increased GHG emissions from industrial, commercial, and vehicular sources. Since the 1970s, emissions sources operating within the park, as well as in California as a whole, have been subject to local stationary-source controls and state and federal mobile-source controls. With the passage of time, such controls have been applied to an increasing number of sources, and the associated requirements have become dramatically more stringent and complex.

Present park actions such as prescribed burning under the FMP have affected park GHG emissions, resulting in negligible adverse impacts on GHG concentrations. The Yosemite Area Regional Transportation System represents a multiagency effort to provide transportation options (along with the Shuttle Bus Replacement Project), reduce reliance on automobiles, and improve regional air quality. Efforts being conducted under this project are expected to result in long-term reductions in GHG emissions throughout the region.

Reasonably foreseeable future actions could have beneficial or adverse impacts on GHG emissions. Construction projects, road rehabilitation, and fire management activities would likely have only short-term impacts. Increased visitor use leading to increased motorized vehicle and energy use would have long-term impacts, although ongoing state and federal programs would ameliorate this effect to some extent. GHG emissions produced by these actions would not be detectable when considering impacts on global climate change.

Cumulative projects have had adverse impacts due to associated regional GHG emission influences. The

effect of the No Action alternative would not be detectable when considered with impacts on global climate change.

Impairment

The No Action alternative would have no change to the current park impact on GHG emissions. Alternative 1 would not impact future generations by increasing GHG emissions.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. Vista clearing and management in the park would increase under this alternative. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment, continuing at a rate of about 30 annually.

Under Alternative 2, vista management-related GHG emissions would be generated by vegetation removal equipment, prescribed burning, and the reduction in carbon sequestration provided by vegetation. Vista clearing would require more motorized equipment use than would typically be necessary strictly for fire management. If estimates of motorized equipment use in the FMP were doubled, GHG emissions would still be negligible (see CO_2 emissions estimates in Table III-7). The "Actions Common to All Alternatives," "Air Quality," and "Mitigation" sections provide a framework to minimize emissions. Under Alternative 2, adverse impacts would be negligible to minor.

Cumulative Impacts

Past, present, and reasonably foreseeable future park project actions that affect park GHG emissions themselves would be the same as in Alternative 1. The impact of Alternative 2 would be negligible when considered with impacts on global climate change.

Impairment

Under this alternative, adverse impacts on global climate change resulting from GHG emissions associated with vista management would be negligible. Alternative 2 would not impact future generations by increasing GHG emissions.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas at a rate of about 30 sites annually. Vista management actions and impact would be similar to those described in Alternative 2. Adverse impacts would be minor to negligible under Alternative 3.

Cumulative Impacts

Past, present, and reasonably foreseeable future park project actions that affect park GHG emissions themselves would be the same as in Alternative 1. The effect of Alternative 3 would be negligible when considered with impacts on global climate change.

Impairment

Under this alternative, adverse impacts on global climate change resulting from GHG emissions associated with vista management would be negligible. Alternative 3 would not impact future generations by increasing GHG emissions.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

Under Alternative 4, vista clearing activities would occur, using Professional Team Assessment to prioritize vistas and Scenic Value to determine management actions. Park staff would clear and maintain about 181 obscured or partially obscured vistas at a rate of about 30 annually. Vista management actions and impact would be similar to those described in Alternative 2. Adverse impacts would be minor to negligible under Alternative 4.

Cumulative Impacts

Past, present, and reasonably foreseeable future park project actions that affect park GHG emissions themselves would be the same as in Alternative 1. The effect of Alternative 4 would be negligible when considered with impacts on global climate change.

Impairment

Under this alternative, adverse impacts on global climate change resulting from GHG emissions associated with vista management would be negligible. Alternative 4 would not impact future generations by increasing GHG emissions.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

Under Alternative 5, vista clearing activities would take place, using Professional Team Assessment to prioritize vistas and Ecological Conditions to determine management actions. Park staff would clear and maintain about 167 obscured or partially obscured vistas at a rate of about 30 sites annually. Vista management actions and impact would be similar to those described in Alternative 2. Adverse impacts would be minor to negligible under Alternative 5.

Cumulative Impacts

Past, present, and reasonably foreseeable future park project actions that affect park GHG emissions themselves would be the same as in Alternative 1. The effect of Alternative 5 would be negligible when considered with impacts on global climate change.

Impairment

Under this alternative, adverse impacts on global climate change resulting from GHG emissions associated with vista management would be negligible. Alternative 5 would not impact future generations by increasing GHG emissions.

WILDERNESS

Affected Environment

The California Wilderness Act of 1984 (P.L. 98-425) designated about 94% (or 704,624 acres) of the park as Wilderness, and 1.5% of the park was designated as potential wilderness additions. Aside from road corridors and developed areas, the primary nonwilderness areas of the park are Yosemite Valley and along the southwestern boundary, west of the Tuolumne Grove Road, Big Oak Flat Road, and the Wawona Road.

Yosemite's Wilderness is managed to the standards of the Wilderness Act. Active natural and cultural resources management does occur, but such activities must be performed in the least intrusive manner practical, and only if necessary to preserve the area's wilderness character. Prescribed fire and fire suppression do take place, and recent changes in wildland fire management policy allow for individual fires to be managed for multiple objectives. This will likely increase the area of wildland fire in nondeveloped areas (dependent upon many management factors and trigger points).

Scenic vistas obviously occur in wilderness, although under this plan, those vistas would not be managed. Scenic qualities are important in wilderness, but the appearance of wilderness areas ought to reflect a wild and untrammeled nature and not one that is manipulated by humans. The overall experience of wilderness for a person visiting in wilderness is an important management consideration. Management actions and activity in nonwilderness can impact designated Wilderness. Nonwilderness can intrude on the experience through such factors as the sound of passenger jets, the sound of loud motorcycles, haze and light pollution from nearby cities, or the view of headlights on a distant road at night. In Yosemite, many of these sound and visual intrusions can emanate from Tioga Road. The view *into* wilderness can also be a vicarious experience, and the ability to see a wild and untrammeled nature may provide a visitor a better connection to wilderness.

Environmental Consequences

Methodology

Impacts on wilderness can occur from actions outside of wilderness. The SVMP does not propose any actions within wilderness, but potential impacts on wilderness must be analyzed.

Context: This identifies the setting or area within which impacts are analyzed. These can be a local, regional, or national area of influence. "Localized" is detectable only in the vicinity of the proposed action. "Regional" is detectable on a landscape scale. "National" is detectable on a national scale.

Type of Impact: This analysis identifies potential impacts as either beneficial or adverse. Adverse impacts are those that would degrade wilderness character or interfere with the public's use and enjoyment of wilderness. Beneficial impacts would improve wilderness character or enhance the public's use and enjoyment of wilderness.

Duration of Impact: The duration of an impact is the time required for wilderness character to recover after treatment. Impacts are considered short-term if evidence of human activity last no more than five years following the implementation of an alternative. Impacts are considered long-term if evidence of human activity persist for more than five years following the implementation of an alternative.

Intensity of Impact: The intensity of an impact on wilderness is a measure of change in wilderness character. Negligible impacts would not cause perceptible or detectable changes in wilderness character. Minor impacts are slightly perceptible. Moderate impacts result in apparent effects on wilderness character. Major impacts on wilderness character are substantial and highly noticeable.

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. Standardized mitigations to protect wilderness would not apply to vista clearing activities. Maximum widths and depths for vista clearing would not be specified. Vista clearing activity would continue to be minimal; therefore, there would be a long-term minor beneficial impact on park wilderness adjacent to the project area.

Cumulative Impacts

Cumulative impacts on wilderness are based on analysis of past, present, and reasonably foreseeable future actions in Yosemite's Wilderness in conjunction with the potential effects of this alternative. Past impacts include prevention of Native American burning and a policy of fire suppression, grazing during the 19th and 20th centuries, fish stocking, the killing of predators (such as the California grizzly), the spraying of insects (such as the needle-miner moth), and the attempted eradication of plant species (such as gooseberries and poison oak). Large areas of the western part of Yosemite were logged in the early part of the 20th century. The creation of the Wilderness Act and the designation of Wilderness within Yosemite Park has protected this resource to a large degree and allows the designated area to recover from past adverse impacts. The impact of these past activities on wilderness has been localized and regional long-term moderate beneficial.

Present park planning efforts and actions that affect park wilderness include the *General Management Plan for Yosemite*, the *Wilderness Management Plan* and the *Fire Management Plan*. These plans all call for and specify protection of wilderness in Yosemite National Park. Fire management has decreased fire

suppression activities in wilderness and allows the natural process to take place in systems adapted to fire. Structures in wilderness such as trails, bridges, and campsites both enhance and diminish wilderness experience. These facilities may detract from the untrammeled nature of wilderness from the perspective of some visitors, but most visitors depend on these features and tolerate their presence. Outside the park the visibility of man's influence on the environment continues through such factors as airplanes overhead, night sky light pollution, views of clearcuts or other development visible from within wilderness, and crowding due to population increases. Noise intrusion from airplanes and loud motorcycles affect the wilderness experience. Present actions and activities have a localized and regional long-term beneficial moderate impact..

Reasonably foreseeable actions that could affect wilderness in Yosemite include the Merced and Tuolumne Wild and Scenic River comprehensive management plans, and the *High Elevation Aquatic Ecosystem Recovery and Stewardship Plan*. Actions called for under the river plans may provide additional large-scale protection of wilderness. Prescribed fire and managed wildland fire activities would greatly reduce the threat of large high-severity catastrophic fires, and would reduce the potential for vegetation type conversion. The *High Elevation Aquatic Ecosystem Recovery and Stewardship Plan* may be beneficial for native wildlife that inhabit wilderness. These actions would have a localized and regional long-term positive moderate impact.

The cumulative impacts on wilderness of past, present, and future effects would be long-term, regional and local, moderate and beneficial. When considered with past, present, and future actions, the No Action alternative would produce little change and would have a long-term moderate beneficial impact on park wilderness.

Impairment

Because impacts on park wilderness associated with Alternative 1 would be moderate and beneficial, Alternative 1 would not impair the park wilderness for future generations.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment. Alternative 2 would remove vegetation at select nonwilderness locations along road corridors, nonwilderness meadows, and Yosemite Valley. In comparison with alternatives 3 and 5, this alternative may allow for more aggressive vegetation removal.

Vista management under Alternative 2 could cause indirect short-term localized negligible to minor adverse impacts on wilderness in the areas immediately adjacent to vista clearing. Areas in wilderness may be effected by actions in non-wilderness by exposing non-wilderness sights, as well as noise from vehicles and mechanized equipment management operations. The annual work plan review and *Mitigation Measures* provide a framework to minimize potential adverse impacts on park areas designated as wilderness. Clearing vistas could improve views of wilderness areas, which could result in increased public awareness and enjoyment of wilderness. This enhanced public awareness of wilderness could result in negligible beneficial impacts on park wilderness. With mitigation, impacts on wilderness character as a result of Alternative 2 activities would be negligible.

Cumulative Impacts

Past, present, and reasonably foreseeable future park project actions that affect park wilderness would be the same as in Alternative 1. Under Alternative 2, vista management actions would result in localized short-term indirect negligible to minor adverse impacts on wilderness in the areas immediately adjacent to vista clearing. With mitigation, these impacts would be minimized. There is a long-term benefit in maintaining views into wilderness, as doing so heightens awareness of and appreciation for designated wilderness areas. When considered cumulatively, the effects of Alternative 2 would be negligible; impacts would continue to be localized and regional long-term moderate beneficial.

Impairment

Because impacts on park wilderness associated with Alternative 2 would be negligible, Alternative 2 would not impair the park wilderness for future generations.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas.

Alternatives 3 would remove vegetation at select nonwilderness locations along road corridors, in nonwilderness meadows, and in Yosemite Valley. In comparison with alternatives 2 and 4, this alternative may be remove less vegetation. The incorporation of Ecological Conditions would place greater limits on management actions.

Impacts on park wilderness would be similar to those described in Alternative 2. Vista management actions would result in localized indirect short-term negligible to minor adverse impacts on wilderness in the areas immediately adjacent to vista clearing. Maintaining vistas into wilderness would have a beneficial impact. With mitigations, impacts resulting from vista clearing activities would be negligible to wilderness character.

Cumulative Impacts

Past, present, and reasonably foreseeable future park project actions that affect park wilderness would be the same as in Alternative 1. Under Alternative 3, vista management actions would result in localized indirect short-term negligible to minor adverse impacts on wilderness in the areas immediately adjacent to vista clearing. With mitigation, these impacts would be minimized. There is a benefit in maintaining views into wilderness, as doing so heightens awareness of and appreciation for designated wilderness areas. When considered cumulatively, the effects of Alternative 3 would be negligible; impacts would continue to be localized and regional long-term moderate beneficial.

Impairment

Because impacts on park wilderness associated with Alternative 3 would be negligible, Alternative 3 would not impair the park wilderness for future generations.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

Under Alternative 4, scenic vista management would take place, using Professional Team Assessment to prioritize vistas and Scenic Value to determine management actions. Alternative 4 would remove vegetation at select nonwilderness locations along road corridors, in nonwilderness meadows, and in Yosemite Valley. Park staff would consider clearing and maintaining 181 sites within the park. In comparison with alternatives 3 and 5, this alternative may allow for more aggressive vegetation removal. Impacts on wilderness are less clear with Professional Team Assessment than the VRA because actions are more dependent on future management staff. More vistas around wilderness could be selected for management, or fewer sites selected, as each vista is selected on a case-by-case basis.

Impacts on park wilderness would be similar as those described in Alternative 2. Vista management actions would result in localized indirect short-term and negligible to minor adverse impacts on wilderness in the areas immediately adjacent to vista clearing. Maintaining vistas into Wilderness would have a beneficial impact. With mitigations, impacts on wilderness character as a result of vista clearing activities would be negligible.

Cumulative Impacts

Past, present, and reasonably foreseeable future park project actions that affect park wilderness would be the same as in Alternative 1. Under Alternative 4, vista management actions would result in localized indirect short-term negligible to minor adverse impacts on wilderness in the areas immediately adjacent to vista clearing. With mitigation, these impacts would be minimized. There is a benefit in maintaining views into wilderness, as doing so heightens awareness of and appreciation for designated wilderness areas. When considered cumulatively, the effects of Alternative 4 would be negligible; impacts would continue to be localized and regional long-term moderate beneficial.

Impairment

Because impacts on park wilderness associated with Alternative 4 would be negligible, Alternative 4 would not impair the park wilderness for future generations.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

Under Alternative 5, scenic vista management would occur using Professional Team Assessment to prioritize vistas and Ecological Considerations to determine management actions. Alternative 5 would remove vegetation at select nonwilderness locations along road corridors, in nonwilderness meadows, and in Yosemite Valley. In comparison with alternatives 2 and 4, this alternative would be less aggressive in removing vegetation. The incorporation of Ecological Conditions would place greater limits on management actions. Impacts on wilderness are less clear with Professional Team Assessment than with the VRA because actions are more dependent on future management staff. About 167 sites would be considered for initial treatment. More vistas around wilderness could be selected for management, or fewer sites selected, as each vista is selected on a case-by-case basis.

Impacts on park wilderness would be similar to those described in Alternative 2. Vista management actions would result in localized indirect short-term negligible to minor adverse impacts on wilderness in the areas immediately adjacent to vista clearing. Maintaining vistas into wilderness would have a beneficial impact. With mitigations, impacts on wilderness character as a result of vista clearing activities would be localized long-term negligible.

Cumulative Impacts

Past, present, and reasonably foreseeable future park project actions that affect park wilderness would be the same as in Alternative 1. Under Alternative 5, vista management actions would result in localized short-term negligible to minor adverse impacts on wilderness in the areas immediately adjacent to vista clearing. With mitigation, these impacts would be minimized. There is a long-term benefit in maintaining views into wilderness, as doing so heightens awareness of and appreciation for designated wilderness areas. When considered cumulatively, the effects of Alternative 5 would be negligible; impacts would continue to be localized and regional long-term moderate beneficial.

Impairment

Because impacts on park wilderness associated with Alternative 5 would be negligible, Alternative 5 would not impair the park wilderness for future generations.

SCENIC RESOURCES

Affected Environment

Yosemite National Park was set aside for preservation and the enjoyment of the American public because of its outstanding scenery. The spectacular waterfalls, giant sequoia trees, open meadows, and soaring granite cliffs drew tourists and artists even when visiting required days of rough travel (Carr 1998). The Yosemite Land Grant of 1864 included only Yosemite Valley and the Mariposa Grove of Big Trees, but outstanding scenery is not exclusive to these areas within Yosemite National Park. The great beauty and mountains beyond the valley continue to be written about and praised by many after being famously described by John Muir. John Muir wrote about the beauty of Tuolumne Meadow in *The Century Magazine*:

> *Along the river are a series of beautiful glacier meadows stretching, with but little interruption, from the lower end of the valley to its head, a distance of about twelve miles. These form charming sauntering grounds from which the glorious mountains may be enjoyed as they look down in divine serenity.* (Muir 1890)

As the park developed over the next century, roads were aligned, buildings were sited, and trails were constructed to maximize the visitors' ability to experience Yosemite's scenic wonders (DuBarton 2007; Davis 2004). The importance of scenery and scenic resources have factored into park management. Specifically, the 1980 *General Management Plan* (GMP) set five broad goals to guide management of the park. One of the five is:

> *To preserve, protect, and reestablish scenic resources* (NPS 1980a).

It also notes important icons and scenic features that are closely identified with Yosemite National Park (Table III-8). The Scenic Icons are closely associated with Yosemite Valley, and the Scenic Resources are valued features that can be seen parkwide. Eighty-four percent of park visitor's plan for "viewing scenery/ taking scenic drives" when visiting (Kuhn and Johnson 2008). Only a small fraction of visitors ever experience scenic resources beyond the roads (Kuhn and Johnson 2008).

The scenic resources of Yosemite National Park can include not only the Scenic Icons and Scenic Resources identified in the GMP, but also numerous other views seen throughout the park.

Major Thoroughfares

As stated before, roads are the primary means by which most visitors experience the scenic resources of the park, and most were intentionally built to reveal the natural beauty of the region (Quin 1991, Carr 1998). Tioga Road offers broad subalpine and alpine views of meadows, domes, distant peaks, and Tenaya Lake. Exfoliating granite surfaces along Tioga Road provide a unique view of the geologic processes at work in Yosemite. Big Oak Flat Road has notable views of Big Meadow and Foresta, Half Dome, Cascade Falls, distant ridges west of the park, San Joaquin Valley, Hodgdon Meadow, and the Sierra Crest. Yosemite Valley Loop Road reveals the dramatic icons of Yosemite Valley. Wawona Road includes the iconic Tunnel View vista point, and views of the Merced River, Merced Canyon, Chowchilla Mountains, the South Fork of the Merced River, forests, granite features such as Wawona Dome, and the Wawona Hotel and its historic landscape. Glacier Point Road has dramatic vistas down Merced Canyon, out to the Sierra Crest, and famous vistas at Glacier Point and Washburn Point (NPS 2010b).

El Portal: Scenery in El Portal includes the V-shaped Merced River gorge with its steep, unglaciated terrain and woodland and grassland cover, and the rocky boulder-strewn riverbed.

Additional aspects of scenic resources are discussed under the "Historic Structures, Buildings, and Cultural Landscapes" section and in the "Roads and Transportation" section.

Table III-8. Features in the Yosemite National Park General Management Plan (NPS 1980a)

Important Scenic Icons	Scenic Resources
Half Dome	*Sierra Crest*
Yosemite Falls	*Sequoia Groves*
El Capitan	*Yosemite Valley*
Bridalveil Fall	*Tuolumne Meadows*
Three Brothers	*Tenaya Lake*
Cathedral Rock and Spires	*Clark Range*
Sentinel Rock	*Cathedral Range*
Glacier Point	*Merced River*
North Dome	*Grand Canyon of the Tuolumne*
Washington Column	
Royal Arches	

Environmental Consequences

Methodology

The impact of an alternative on scenic resources is based on the judgment of how the quality of the visitor experience is affected. This experience can be judged in terms of the quality of the visual experience and in terms of the general number of opportunities provided. Experiential factors include whether a given action would result in a visible change, the duration of any change in the visual character, and the general number of viewers that would be affected. Opportunities to experience scenic resources are evaluated by the potential of the alternative to reestablish more vistas. Impacts are assessed in terms of context, duration, intensity, and type.

Context: This identifies the setting or area within which impacts are analyzed. These can be a localized, regional, or national area of influence. "Localized" is detectable only in the vicinity of the proposed action. "Regional" is detectable on a landscape scale. "National" is detectable on a national scale.

Type of Impact: The type of impact is considered beneficial or adverse. Beneficial impacts would enhance the quality of visitor experience by increasing the ability to enjoy the intended vistas via visual and physical access. Adverse impacts would reduce the quality of visitor experience by allowing restrictions to visual and physical access to a vista from the intended viewing area.

Duration of Impact: The duration of scenic resources impacts is characterized as short-term or long-term. A short-term impact would be temporary (less than two years), and a long-term impact would be permanent and continual.

Intensity of Impact: The intensity of impacts on scenic values is described as negligible, minor, moderate, or major. Negligible impacts would be visually imperceptible or not detectable. Minor impacts would be slightly detectable or localized within a relatively small area. Moderate impacts are those that would be readily apparent. Major impacts would be substantial, highly noticeable, and/or would change the character on a landscape scale.

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. Standardized mitigations to protect scenic resources would not apply to vista clearing activities. Maximum widths and depths for vista clearing would not be specified. Vista clearing activity would continue to be minimal; therefore, vistas would have the potential to be permanently lost as vegetation obscures and establishes to the point of creating new habitat and vegetation communities that could not be removed because of natural resource considerations. Adverse impacts on scenic resources within the project area would be local long-term moderate.

Cumulative Impacts

Cumulative impacts on park scenic resources are based on analysis of past, present, and reasonably foreseeable future park actions in conjunction with the potential effects of this alternative.

Past action impacts on park scenic resources include prevention of American Indian burning, a policy of fire suppression, grazing during the 19th and 20th centuries, altering hydrology, vista clearing done in the 1930s and 1950s in which some obscured vistas were cleared, and the removal of conifer

encroachment in meadows. More recent vista management actions have taken place over the past 10-15 years at specific vista locations, including Olmsted Point, Half Dome Overlook, Tunnel View, Valley View, Hutchings View, and the San Joaquin Overlook. While some vistas have been cleared, overall past actions have had moderate adverse localized long-term impacts.

Present actions and plans that affect park scenic resources are the *General Management Plan for Yosemite National Park,* the *Fire Management Plan,* the *Invasive Plant Management Plan,* the *Vegetation Management Plan,* and the *Communication Data Network Plan.* The vegetation and general management plans both call for management and improvement of scenic resources in the park. The fire and invasive plant management plans call for ongoing actions in which the goal is to restore or stabilize the natural vegetation communities through the use of fire or by controlling nonnative plants. Road-related projects include the Tioga Trailheads Project, Crane Flat Utilities, Glacier Point Road Rehabilitation, and the Valley Loop Road and the Tioga Road and Generals Highway rehabilitations. While some vistas have been cleared or more open due to fire management, overall these plans would have negligible local long-term beneficial impacts on park scenic resources.

Reasonably foreseeable actions and plans that may affect park scenic resources include the "Tuolumne River Wild and Scenic River Comprehensive Management Plan," the "Merced River Wild and Scenic River Comprehensive Management Plan," the *Parkwide Invasive Plant Management Plan Reissue*, and the *High Elevation Aquatic Ecosystem Recovery and Stewardship Plan.* Other future actions that could cumulatively affect park scenic resources include a continuation of historic structure and building documentation and rehabilitation projects, ecological restoration projects, increased visitor use, and regional population growth. Parkwide planning efforts such as the "Tuolumne River Wild and Scenic River Comprehensive Management Plan" and the "Merced River Wild and Scenic River Comprehensive Management Plan" would likely further protect scenic resources on a watershed scale. Increased population growth and subsequent visitor use may have an adverse negligible impact on park scenic resource viewing areas. Cumulatively, future actions would have localized negligible long-term beneficial impacts.

Although some park actions are beneficial to park scenic resources, past, present, and reasonably foreseeable future actions would have adverse local long-term minor impacts since vegetation would continue to obscure most vistas, making it more difficult for visitors to experience the scenic resources of Yosemite National Park.

The No Action alternative would have long-term minor localized adverse impacts on access to scenic resources. When considered with past, present, and reasonably foreseeable future actions, impacts would continue as long-term minor localized adverse. Many vistas would continue to become lost or obscured, and some would occasionally be reestablished on a case-by-case basis.

Impairment

Alternative 1, when considered with cumulative impacts, would limit opportunities or make it more difficult to enjoy scenic resources, but it would not cause impairment to scenic resources for future generations.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (VRA) (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. The VRA is a system to evaluate vistas and is weighted towards factors people find aesthetically pleasing, such as

distant vistas across a varied landscape (NPS 2008a). Scenic Value criteria could allow vistas to be cleared more aggressively, with more emphasis given to aesthetics than to ecological considerations. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment.

Under this alternative there would be an increase in vista clearing and management, resulting in more viewing opportunities for visitors. Cleared vista sites immediately after management could be perceived by visitors as appearing unsightly or unnatural. Infrastructure or other unnatural features that were once obscured could become exposed or more visible after vista clearing has taken place. Prescribed burning associated with vista management may emit high levels of smoke and temporarily obscure nearby scenic views. Vista viewing areas would be restricted temporarily during management operations. These would be minor local short-term adverse impacts. The "Mitigations" and "Actions Common to All Action Alternatives" sections provide a framework to avoid or minimize potential adverse impacts on park scenic resources. Mitigations should reduce or eliminate any adverse visual impact that might detract or distract from a visitor's visual experience of nature. Viewing area aesthetics would also be considered when managing vistas. Foreground revegetation could be implemented to screen evidence of recent work or unsightly infrastructure. Alternative 2 would have overall long-term localized moderate beneficial impacts on scenic resources.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park resources would be the same as in Alternative 1. When considered with past, present, and future actions, Alternative 2 would not change the past suppression of processes, such as fire, and the consequences. This alternative would create limited vista clearings to scenic resources. The impacts on scenic resources of Alternative 2, when considered with the cumulative impacts of actions, would be local long-term negligible to minor and beneficial.

Impairment

Because long-term impacts would be beneficial to scenic resources, Alternative 2 would not impair park scenic resources for future generations.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas.

The incorporation of Ecological Conditions under this alternative would further protect biological resources in more sensitive areas, which could result in some vistas not being cleared as aggressively.

Impacts on scenic resources would be similar to those described in Alternative 2. Alternative 3 would have overall long-term localized moderate beneficial impacts on scenic resources.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park resources would be the same as in Alternative 1. When considered with past, present, and future actions, Alternative 3 would not change the past suppression of processes, such as fire, and the consequences. This alternative would create limited vista clearings to scenic resources. The impacts on scenic resources of Alternative 3, when considered with the cumulative impacts of actions, would be localized long-term negligible to minor beneficial.

Impairment

Because long-term impacts would be beneficial to scenic resources, Alternative 3 would not impair park scenic resources for future generations.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

Under Alternative 4, vista clearing activities would take place, using Professional Team Assessment to assess and prioritize vistas, and Scenic Value to determine management actions. Professional Team Assessment could allow vistas to be cleared for reasons to be determined in the future. This alternative would consider 181 sites for initial clearing and maintenance. Scenic Value criteria could allow vistas to be cleared more aggressively, with more emphasis given to aesthetics than to ecological considerations.

Impacts on scenic resources would be similar to those described in Alternative 2. Alternative 4 would have overall long-term localized moderate beneficial impacts on scenic resources.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park resources would be the same as in Alternative 1. When considered with past, present, and future actions, Alternative 4 would not change the past suppression of processes, such as fire, and the consequences. This alternative would create limited vista clearings to scenic resources. The impacts on scenic resources of Alternative 4, when considered with the cumulative impacts of actions, would be localized long-term negligible to minor beneficial.

Impairment

Because long-term impacts would be beneficial to scenic resources, Alternative 4 would not impair park scenic resources for future generations.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

Under Alternative 5, vista clearing activities would occur, using Professional Team Assessment to prioritize vistas and Ecological Conditions to determine management actions. This alternative would consider about 167 sites for initial clearing and maintenance. Professional Team Assessment could allow

vistas to be cleared for reasons to be determined in the future. The incorporation of Ecological Conditions under this alternative would further protect biological resources in more sensitive areas, which could result in some vistas not being cleared as aggressively.

Impacts on scenic resources would be similar to those described in Alternative 2. Alternative 4 would have overall long-term localized moderate beneficial impacts on scenic resources.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park resources would be the same as in Alternative 1. When considered with past, present, and future actions, Alternative 5 would not change the past suppression of processes, such as fire, and the consequences. This alternative would create limited vista clearings to scenic resources. The impacts on scenic resources of Alternative 5, when considered with the cumulative impacts of actions, would be localized long-term negligible to minor and beneficial.

Impairment

Because long-term impacts would be beneficial to scenic resources, Alternative 5 would not impair park scenic resources for future generations.

ARCHEOLOGICAL AND ETHNOGRAPHIC RESOURCES

Affected Environment

A long history of human occupation in Yosemite National Park is evidenced by Cultural Resources. These resources include cultural landscapes, historic structures, museum objects, traditional cultural properties, and archaeological sites. The occupation was particularly characterized by an intimate relationship with fire that shaped all aspects of human interaction with the environment, including the resulting views of the surrounding landscape. For all alternatives described in this vista management plan, much of the implementation involves manipulation of vegetation that either uses or mirrors the effects, and the affected environment, described in the 2004 *Final Fire Management Plan Environmental Impact Statement* (NPS 2004b).

Thus, much of the information presented here is based on that presented in the FMP cultural resources described include both historic properties, as defined in the implementing regulations for the National Historic Preservation Act, and cultural resources as defined in the National Environmental Policy Act.

Human Occupation

American Indian Occupation

Archaeological evidence from the over 1,800 known archeological sites in Yosemite National Park and the El Portal Administrative Site suggests 9,500 years of human occupation. The study of those sites indicates cultural and technological changes that reflect potential population change, extensive trade, and the intentional use of fire to alter the surrounding vegetation. Spanish colonization of the region in the late 1700s drove coastal and valley peoples to take refuge in the Sierra Nevada. The trade materials and European diseases they carried with them altered dramatically the lifeways of the tribes they encountered and with whom they became integrated.

The lands now encompassing Yosemite National Park are considered traditional homelands for a number of contemporary Indian peoples. During the 1800s the regional landscape witnessed broadscale and traumatic cultural change resulting from the invasion of nonnatives triggered by the California Gold Rush. At the time of contact with Euro-Americans (1851), Yosemite Valley was home to a diverse group who called themselves the "Yosemites" and were led by Tenaya, son of a Miwok father and a Mono Lake Paiute mother. Tenaya's band likely included individuals from Southern Sierra Miwok, Mono Lake Paiute, Central Sierra Miwok, and Yokuts, and probably included former Mission Indians, likely from Ohlonean groups. The larger park area was inhabited and used by several cultural groups, including Southern and Central Miwok, Western Mono, and Chukchansi Yokuts groups from the southern foothills, and Northern Paiute from Mono Lake and other areas.

Euro-American Occupation

Euro-American use of the Yosemite region, although relatively brief, has seen tremendous change in the natural and cultural landscape. The spectacular scenery drew national attention beyond sporadic visitation beginning in the mid-1850s and the 1860s, encouraging development and infrastructure to support early tourism, which in turn spurred Abraham Lincoln in 1864 to grant the Big Tree Grove (Mariposa Grove) and Yosemite Valley to the state of California, in part to preserve the monumental scenic vistas.

Tourism grew, as did other uses such as mining, logging, and grazing, which in turn stimulated the congressional act establishing Yosemite National Park in 1890. Although the Yosemites continued to live in Yosemite Valley, hunting and using fire to manage the landscape effectively stopped between 1864 and 1890, enforced by the Yosemite Commissioners and the United States Cavalry. Logging of the surrounding areas, along with fire suppression and road building, contributed to a landscape change in vegetation and the associated views. In the 20th century, the administration of the park by the NPS saw a wide variety of projects enacted by the Civilian Conservation Corps under the auspices of the Public Works Administration, including construction and restoration. Many of these projects formalized access to recognized vista viewing points.

As suggested in the above chronology, fire, both naturally occurring and intentionally set or suppressed, has played a major role in the development of or access to the scenery that has made Yosemite National Park an international destination. The FMP describes the changing philosophies that limited the application of fire, by both Native Americans and Euro-Americans such as sheep herders, in an attempt to preserve the scenic qualities of the park. It soon became clear that these philosophies were perhaps shortsighted in their management objectives. Fire suppression, along with other management actions, led to closing meadows, thicker underbrush, and obscured views.

Historic Structures, Buildings, and Cultural Landscapes

Cultural landscapes, buildings, and historic structures are most likely to be directly affected by the implementation of the vista management plan and are described further in the "Historic Structures, Buildings, and Cultural Landscape" section.

Ethnographic Resources

The NPS defines ethnographic resources as any "site, structure, object, landscape, or natural resource feature assigned traditional, legendary, religious, subsistence or other significance in the cultural system of a group traditionally associated with it" (NPS 1998). The importance of any ethnographic resource is defined from the perspective of the traditionally associated peoples.

Many American Indian peoples and groups continue their traditional cultural association with park lands and resources. At least seven tribes, both federally recognized and nonfederally recognized, are associated with the park and are consulted during project planning. These park-associated tribes and groups include the American Indian Council of Mariposa County, Inc. (also known as the Southern Sierra Miwuk Nation); the North Fork Mono Rancheria; the Tuolumne Band of Me-Wuk Indians; the Picayune Rancheria of Chukchansi Indians; the Kutzadikaa (Mono Lake Paiute); the Bridgeport Indian Colony; and the Bishop Paiute Tribe. Consultation with these groups has indicated a concern about landscape changes caused by fire exclusion or differing implementation of fire, as well as by infrastructure.

Traditional Cultural Properties

A traditional cultural property (TCP) is a type of ethnographic resource that is eligible for listing in the *National Register of Historic Places* "because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history and (b) are important in maintaining the continuing cultural identity of the community" (Parker and King 1998). To date, two places in Yosemite Valley have been proposed as traditional cultural properties: Yosemite Valley as a whole, and the "New Indian Village," the last historically occupied Indian Village in Yosemite Valley.

It should be recognized that a complete picture of traditional cultural properties may not be possible given changing use of areas and possible hesitation among Native Americans related to divulging sensitive information about areas of spiritual significance or other highly valued cultural use areas and resources. Ongoing tribal consultation would be needed to ensure that proposed actions to manage scenic vistas do not impede access to and protection of TCPs and other identified ethnographic resources. Additionally, ongoing consultation may provide useful information that could expand the interpretive programs associated with iconic vistas to include multiple cultural perspectives and values.

Traditional Cultural Practices

As described in earlier sections, many American Indian peoples and groups continue their traditional cultural association with lands and resources within Yosemite National Park.

Information exists regarding traditional and contemporary uses in El Portal, Yosemite Valley, and Wawona. The NPS has identified a critical need for comprehensive ethnographic and traditional use studies to guide land and resources management. Some general information regarding contemporary cultural practices in the park is known by park managers.

The gathering of culturally significant plants and other resources currently takes place in the park. American Indians in the Sierra Nevada have shaped the environment intentionally through the application of land management practices based on sophisticated traditional ecological knowledge. Fire was probably the most effective and widely used management tool. Many of the scenic vistas highly valued today were a result of American Indians land management practices, and it is important that

managers today recognize the contribution of American Indians' manipulation of the environment to the scenic vistas that inspired the creation of Yosemite National Park.

Some areas with spiritual value for native peoples are iconic subjects of modern visitor interest as well. Treating views of landforms important for continuing spiritual use by traditionally associated American Indians may require special evaluation to understand and address potential need for privacy or other accommodation. In the absence of comprehensive studies that focus on the peoples and groups traditionally associated with the park and the resources that are culturally significant to them, bringing this information together would require ongoing consultation with the seven Yosemite-associated tribes, and ultimately, a systematic way of reviewing implementation plans with tribal representatives.

Archeological Resources

Archeological sites, the physical remains of past cultures, provide information regarding prehistoric and historic lifeways and give people a tangible link with the past. Historic archeological sites provide important information not available in written records, or supplemental information that can corroborate or dispute written records. Information from historic sites can illuminate other aspects of life, such as cultural patterns typically omitted from historical literature (related to gender and ethnic groups), early building construction techniques, lifestyles of early settlers, trade and procurement of goods and materials, and interactions with native peoples. Historic sites include such things as structural remains, waste dumps, work camps, and remains of logging, hydrological manipulation, and mining activities.

There are some key limitations to the archeological site data. As of 2010, only about 11% of the park has been surveyed for archeological resources, and over 1,800 sites have been recorded. Some early surveys and documentation may not meet current standards of recordation. Much of the existing survey coverage was conducted in support of development projects and is thus focused on the lower western slope along road corridors and infrastructure. The bulk of the unsurveyed area is within the designated Wilderness, which covers almost 94% of the park. Identification of archeological sites through survey usually depends on the surface presence of artifacts, which in Yosemite are dominated by flaked lithic scatters of obsidian, basalt, chert, or groundstone, and the presence of features such as burials, rock art, fire hearths, house-pit depressions, or bedrock mortar milling outcrops. In many cases, the historic exclusion of fire has resulted in obscured surface evidence of sites. These factors mean that the database of archaeological information does not necessarily represent the park's complete archeological resources (Hull and Moratto 1999).

Archeological sites have the potential to be affected by vista management plan implementation actions, such as ground disturbance associated with tree removal, potential increases in vandalism through increased surface visibility, and inadvertent ground disturbance through increased public access and trampling.

Museum Objects and Collections

Yosemite National Park houses records and collections of over four million items in multiple repositories around the park. These include controlled climate collections housed in El Portal and Yosemite Valley, as well as historic items still in use for demonstration or interpretation, such as artifacts on display and buildings moved to the Pioneer Center in Wawona. Museum objects and collections would not be directly affected by the implementation of the vista management plan, but collections may grow indirectly from the recovery and documentation of discovered cultural resources as obscuring vegetation is reduced or removed.

Summary

This discussion of cultural resources is based on general overview studies and specific cultural resource research. The 2004 FMP (NPS 2004b) identifies three missing key studies: an inventory, overview, and assessment of ethnographic resources; traditional association studies; and an administrative history. All studies are still lacking in 2010, except for the administrative history study, which is in partial draft form. The specific location, extent, condition, and significance of many physical resources associated with proposed SVMP actions remain to be adequately recorded. Resources would need to be evaluated on a case-by-case basis to support site-specific planning.

Ethnographic Resources and Traditional Cultural Practices Environmental Consequences

Methodology

An analysis of the impact of American Indian traditional cultural practices would be done as described under the "Impact Analysis General," but cannot be determined at this time because of the absence of comprehensive studies. In accordance with the American Indian Religious Freedom Act (AIRFA) (EO 13007), NEPA, and NHPA, the park-associated tribes would continue to be consulted on a site-by-site basis through the annual work plan review.

Conclusion

Impacts on traditional cultural practices cannot be analyzed at this time. Ongoing consultation with the tribes would continue through the annual work plan review on a site-by-site basis to mitigate or eliminate any adverse impacts.

Archeological Resources and Traditional Cultural Properties Environmental Consequences

Methodology

Analysis was done qualitatively, in accordance with 36 CFR 800 criteria of effect-based potential impacts.

Type of Impact: Under the NHPA, impacts are characterized as having no effect, an adverse effect, or no adverse effect on historic properties. When the impact of an action results in an alteration to the integrity or characteristics of historic property that qualify it for inclusion in the *National Register of Historic Places* (NRHP), the action is considered to have an adverse effect under Section 106 of the NHPA.

For example, a change in the physical attributes of an archeological site may affect the significant information contained in that site. This type of change is usually irreparable, and any such change due to implementation of an alternative would be considered adverse and permanent. Adverse impacts on archeological resources could result, for example, from ground disturbance related to soil compaction, erosion due to loss of vegetation, or excavation for removal of stumps or installation of infrastructure. Because archeological resources are nonrenewable and irreplaceable resources, the effects of actions ranging from preservation to destruction are permanent.

The 1999 PA (NPS 2003b) allows Yosemite National Park to avoid adverse effects on archeological resources when those resources are significant under Criterion D (for their ability to provide significant

information) and when treatment is guided by the *Yosemite Research Design and Archeological Synthesis*. If the 1999 PA could not be implemented to avoid or minimize the effect, and the NPS, the California State historic preservation officer, and the Advisory Council on Historic Preservation could not agree on measures to avoid or minimize adverse impacts and are unable to negotiate and execute an alternate Memorandum of Understanding in accordance with 36 CFR 800.6(b), the effect would remain adverse.

Alternative 1: No Action

Analysis

Yosemite National Park would continue vista restoration on an ad hoc basis at a rate of about three vistas per decade. There would be no regular maintenance program. Existing impacts on archeological resources and traditional cultural properties would continue under the No Action alternative. Views to features of cultural importance would become further obscured and potentially lost. For example, culturally significant views could be lost if obscuring vegetation becomes critical habitat over time, making such vistas off-limits for vegetation removal.

Under the No Action alternative, there is the potential for vistas associated with archeological resources and traditional cultural properties to be impacted. Although archeological information associated with potential vista sites would remain undisturbed, and disturbance by visitor use would be less likely, some culturally significant vegetation would be adversely impacted by a lack of vista management. In consultations with tribes, California black oaks were identified as significant. Studies have shown that conifer encroachment has made California black oak persistence more difficult (Gibbens 1964). For this reason, the No Action alternative could result in adverse impacts on some traditional cultural properties, such as historic vistas and culturally significant vegetation.

Cumulative Impacts

Cumulative impacts on archeological resources and traditional properties are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region.

In the past, archeological resources and traditional cultural properties in the Yosemite region have been subject to damage from development, vandalism, visitor access, and natural processes, including fire.

Present park projects that may affect archeological resources due to potential soil and vegetation disturbance include the Yosemite Institute Environmental Education Campus and the Badger Pass Ski Lodge. Ongoing actions as prescribed under the FMP and the *Invasive Plant Management Plan* (IPMP) continue. While prescribed fire and managed wildland fire activities would greatly reduce the threat of large high-severity catastrophic fires, fire activities would also contribute to the damage and/or loss of some regional archeological resources and traditional cultural properties through burning and postburn activities. The Resource Advisor (READ) program in Yosemite National Park serves to avoid or mitigate damage or loss of both cultural and natural resources as a result of fire management activities. The IPMP calls for invasive plant management activities that may adversely affect archeological resources if ground disturbance occurs in archeological areas. No adverse effects on archeological resources are expected to be present because actions to control invasive plant species are preapproved by cultural resource specialists.

Reasonably foreseeable future park actions that could affect archeological resources and traditional cultural properties include the "Tuolumne River Wild and Scenic River Comprehensive Management Plan," the "Merced River Wild and Scenic River Comprehensive Management Plan," the *Invasive Plant Management Plan Update*, increased visitor use, and regional population growth. Increased visitor use due to population growth may increase the possibility of affecting archeological resources and

traditional cultural properties. Future park plans will likely continue, or provide additional protection to, archeological resources and traditional cultural properties.

Overall, projects that could have an adverse cumulative impact on archeological resources or traditional properties could be mitigated by implementing the 1999 PA (NPS 2003b). These projects, when combined with Alternative 1, are expected to have no adverse effects on archeological resources and traditional cultural properties.

Impairment

Alternative 1 would not impair the park's archeological resources and traditional cultural properties for future generations.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. A vista associated with a cultural landscape receives a higher value; it is a small factor, but it ensures that vistas associated with traditional landscape are considered in the assessment process. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment. The lack of Ecological Conditions integration may allow for more aggressive actions that could potentially increase disturbance to archeological resources or traditional properties.

Under Alternative 2, vista clearing and management would increase. Vista management activities could disturb soil and vegetation and have an adverse effect on archeological resources or traditional properties in or adjacent to vista clearing sites. In addition, vista management attracts more visitors to a location, thereby increasing the potential for disturbance.

The annual work plan review would also provide a framework to avoid or minimize potential impacts on these cultural resources. This would be done by identifying cultural resource concerns associated with potential vista management sites, including archeology and traditional cultural properties. The annual work plan review would identify sensitive and valuable resources and adverse effects avoided or mitigated through the 1999 PA (NPS 2003b).

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park archeological resources and traditional cultural properties would be the same as in Alternative 1. Adverse effects due to vista management activities would be mitigated by the 1999 PA and the annual work plan review. The annual work plan review would identify vista sites to avoid or state mitigations to resources of concern. Alternative 2 would have no adverse effect on park archeological resources and traditional properties.

Impairment

Alternative 2 would not impair the park's archeological resources and traditional cultural properties for future generations.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas. A vista associated with a cultural landscape receives a higher value; this is a small factor, but it ensures that vistas associated with traditional landscape are considered in the assessment process. Utilizing additional protections with Ecological Conditions at specific vista sites would more easily integrate culturally significant plant species. For example, in consultations with tribes, California black oaks were identified as significant, and California black oaks would have further protection spelled out in the appropriate plant communities.

Under Alternative 3, there would be an increase in vista clearing and management. Vista management activities could disturb soil and vegetation and have an adverse effect on archeological resources or traditional properties in or adjacent to vista clearing sites. In addition, vista management attracts more visitors to a location, thereby increasing the potential for disturbance.

The annual work plan review would also provide a framework to avoid or minimize potential impacts on these cultural resources. This would be done by identifying cultural resource concerns associated with potential vista management sites, including archeology and traditional cultural properties. The annual work plan review would identify sensitive and valuable resources and adverse effects avoided or mitigated through the 1999 PA (NPS 2003b).

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park archeological resources and traditional cultural properties would be the same as in Alternative 1. Adverse effects due to vista management activities would be mitigated by the 1999 PA and the annual work plan review. The annual work plan review would identify vista sites to avoid or state mitigations to resources of concern. Alternative 3 would have no adverse effect on park archeological resources and traditional properties.

Impairment

Alternative 3 would not impair the park's archeological resources and traditional cultural properties for future generations.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

Under Alternative 4, vista management actions would take place, with Professional Team Assessment used to prioritize vistas and Scenic Value used to determine management actions. The Professional Team Assessment approach to vista prioritization would prioritize vistas on a case-by-case basis, using appropriate criteria determined by the vista managers. Alternative 4 is the most flexible for future project managers and would consider 181 sites for initial clearing and continued maintenance. If assessment criteria chosen by vista managers are based on the cultural importance of the site, vistas associated with cultural landscapes may be more likely to be managed.

Under Alternative 2, vista clearing and management would increase. Vista management activities could disturb soil and vegetation and have an adverse effect on archeological resources or traditional properties in or adjacent to vista clearing sites. In addition, vista management attracts more visitors to a location, thereby increasing the potential for disturbance.

The annual work plan review would also provide a framework to avoid or minimize potential impacts on these cultural resources. This would be done by identifying cultural resource concerns associated with potential vista management sites, including archeology and traditional cultural properties. The annual work plan review would identify sensitive and valuable resources and adverse effects avoided or mitigated through the 1999 PA (NPS 2003b).

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park archeological resources and traditional cultural properties would be the same as in Alternative 1. Adverse effects due to vista management activities would be mitigated by the 1999 PA and the annual work plan review. The annual work plan review would identify vista sites to avoid or state mitigations to resources of concern. Alternative 4 would have no adverse effect on park archeological resources and traditional properties.

Impairment

Alternative 4 would not impair the park's archeological resources and traditional cultural properties for future generations.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

Under Alternative 5, vista management actions would take place, with Professional Team Assessment used to prioritize vistas and Ecological Conditions used to determine management actions. The Professional Team Assessment approach to vista prioritization would assess vistas on a case-by-case basis, using appropriate criteria determined by the vista managers. This alternative would consider 167 sites for initial clearing and continued maintenance. If assessment criteria chosen by vista managers is based on the cultural importance of the site, vistas associated with cultural landscapes may be more likely to be managed. Utilizing additional protections with Ecological Conditions at specific vista sites would allow culturally significant plant species to be integrated more easily. For example, in consultations with tribes, California black oaks were identified as significant, and California black oaks would have further protection spelled out in the appropriate plant communities.

Under Alternative 5, vista clearing and management would increase. Vista management activities could disturb soil and vegetation and have an adverse effect on archeological resources or traditional properties in or adjacent to vista clearing sites. In addition, vista management attracts more visitors to a location, thereby increasing the potential for disturbance.

The annual work plan review would also provide a framework to avoid or minimize potential impacts on these cultural resources. This would be done by identifying cultural resource concerns associated with potential vista management sites, including archeology and traditional cultural properties. The annual work plan review would identify sensitive and valuable resources and adverse effects avoided or mitigated through the 1999 PA (NPS 2003b).

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park archeological resources and traditional cultural properties would be the same as in Alternative 1. Adverse effects due to vista management activities would be mitigated by the 1999 PA and the annual work plan review. The annual work plan review would identify vista sites to avoid or state mitigations to resources of concern. Alternative 5 would have no adverse effect on park archeological resources and traditional properties.

Impairment

Alternative 5 would not impair the park's archeological resources and traditional cultural properties for future generations.

HISTORIC STRUCTURES, BUILDINGS, AND CULTURAL LANDSCAPES

Affected Environment

Historic structures, buildings, and landscapes are significant because they reflect important eras or the influence of individuals important in the human history of the park. Cultural landscapes are the result of the long interaction between humans and the land. Historic buildings can be monuments to ways in which people occupied and viewed the world around them. They reflect human adaptation and use of resources, as well as the influence of beliefs, values, traditions, and actions over time. Cultural landscapes are shaped over time by historical land use and management practices, as well as by politics, property laws, levels of technology, and economic conditions. Cultural landscapes provide a living record of an area's past and act as a visual chronicle of its history. The original American Indian inhabitants modified the natural environment extensively to suit their way of life, creating the distinctive pattern of meadows and open woodland that is a hallmark of Yosemite Valley. European Americans continued to alter the environment during the 19th and 20th centuries while developing Yosemite into a national park (Ernst 1943, 1961; NPS 2004b).

Roads, turnouts, buildings, and other structures were often sited to take advantage of the scenery all around Yosemite National Park (Carr 1998; Davis 2004). One example is the national landmark Ahwahnee Hotel, from which multiple rooms were intended to capture and frame dramatic vistas to Glacier Point, Half Dome, Yosemite Falls, and Royal Arches. Tunnel View is another example of a design and layout intended to highlight a dramatic vista and allow for easy visitor access to one of the most beautiful vistas in Yosemite National Park (NPS 2007b). Its recent rehabilitation has allowed more visitors to enjoy the historic vista in a safer environment.

Cultural Landscapes and Vegetation

Many cultural landscapes can be defined by their vegetation. These landscapes have been cultivated or used by humans for the practical, sustaining, or aesthetic benefit they derive from them. Vegetation can be either native species or introduced.

In Yosemite National Park, settlers, deliberately and accidentally, introduced many nonnative species during the course of farming, grazing, construction, landscaping, and visitor use activities. Some nonnative trees such as the American elm (*Ulmus americana*), sugar maple (*Acer saccharum*), black locust (*Robinia pseudoacacia*), and various apple varieties *(Malus sp.)* are elements of the cultural landscape. Most of these are represented by mature specimens in the park that survived from the original plantings and have not spread into natural areas; however, black locust now reproduces, has spread beyond the original location, and is considered invasive (NPS 2008d). Other than black locust, tree species that are both invasive and nonnative were not part of the historic planting palette.

Many historic scenic vistas, particularly in the Valley, have been obscured not by invasive species, but by native conifers encroaching into historically open areas. Fire suppression and altered hydrology are cited as chief causes (Ernst 1961). Fire, a naturally occurring phenomenon, had been used by the American Indians to cultivate the landscape and keep the Valley open for centuries (Ernst 1943, 1961; NPS 2004b).While all conifer encroachment in the park may not be credited to previous management policies and practices, in Yosemite Valley such policies and practices are a principal cause of the encroachment.

This encroachment has changed the essential character of Yosemite's cultural landscape by forcing out or reducing the types and patterns of vegetation, as well as the biological diversity that has long been associated with the park. The changing pattern of vegetation and its effect on views and vistas in Yosemite Valley were written about as early as 1881 by James Hutching in his first report as Guardian to the California Commission. This was thirty years after European Americans first saw Yosemite Valley, seventeen years after it was set aside, and seven years after a road reached the Valley. Hutching wrote:

> *A dense growth of underbrush, almost from one end of the Valley to the other, not only offends the eye and shuts out the magnificent views, but monopolizes and appropriates its best land to the exclusion of valuable forage plants and wild flowers.* (Hutching 1990)

In the following year, California State Engineer William Hall called for "heavy growth of young trees" to be "in great measure, gradually cleared out and thinned away" in Yosemite Valley (Ernst 1943). It has been estimated that 50-60% loss of meadow area has occurred in Yosemite Valley from the time European Americans came to the present (Fischer 2009). (See Figure III-3.) This figure was created by digitizing and overlaying the surveys of King and Gardner in 1867 with meadow boundaries last surveyed in 1997.

American Indian Traditional Cultural Properties

Traditional cultural properties are any "site, structure, object, landscape, or natural resource feature assigned traditional, legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (NPS 1998). A traditional cultural property is an ethnographic resource that is eligible for listing in the NRHP. Two places in Yosemite Valley have been identified as potentially eligible traditional cultural properties: the area of the last Indian village occupied in the park, and Yosemite Valley (Bibby 1994).

American Indian peoples and groups continue their traditional cultural association with park lands and resources. Seven federally recognized and unrecognized tribal groups claim ancestral cultural association with park lands. These park-associated tribes and groups include the American Indian Council of Mariposa County, Inc. (Southern Sierra Miwuk Nation); the North Fork Mono Rancheria; the Tuolumne Band of Me-Wuk Indians; the Picayune Rancheria of Chuchansi Indians; the Mono Lake Kutzadika'a Tribe; the Bridgeport Paiute Indian Colony; and the Bishop Paiute Tribe.

American Indians have managed biotic resources in the Sierra Nevada intensively for thousands of years. Resource management practices were widespread, producing ecological consequences in ecosystems of the region (Anderson and Moratto 1996). To meet requirements for firewood, fish and

game, plant foods, craft supplies, and building materials, American Indian peoples shaped the distribution, structure, composition, and extent of certain plant and animal communities. This was accomplished using proto-agricultural techniques such as pruning, sowing, weeding, tilling, selective harvesting, and burning (Anderson 2005).

The suppression of many of these practices is a significant cause of the change in park vegetation. Vistas and the spatial character of traditional cultural properties have changed as a result. Vistas, from traditional cultural landscapes to important cultural features, have become obscured.

Meadows

Meadows are associated with the sweeping vistas found around Yosemite National Park. The spatial quality of meadows allows for panoramic vistas from within, and distant vistas across. The vegetation patterns in meadows can provide a distinct contrast to the surrounding forest and are considered a scenic feature in themselves.

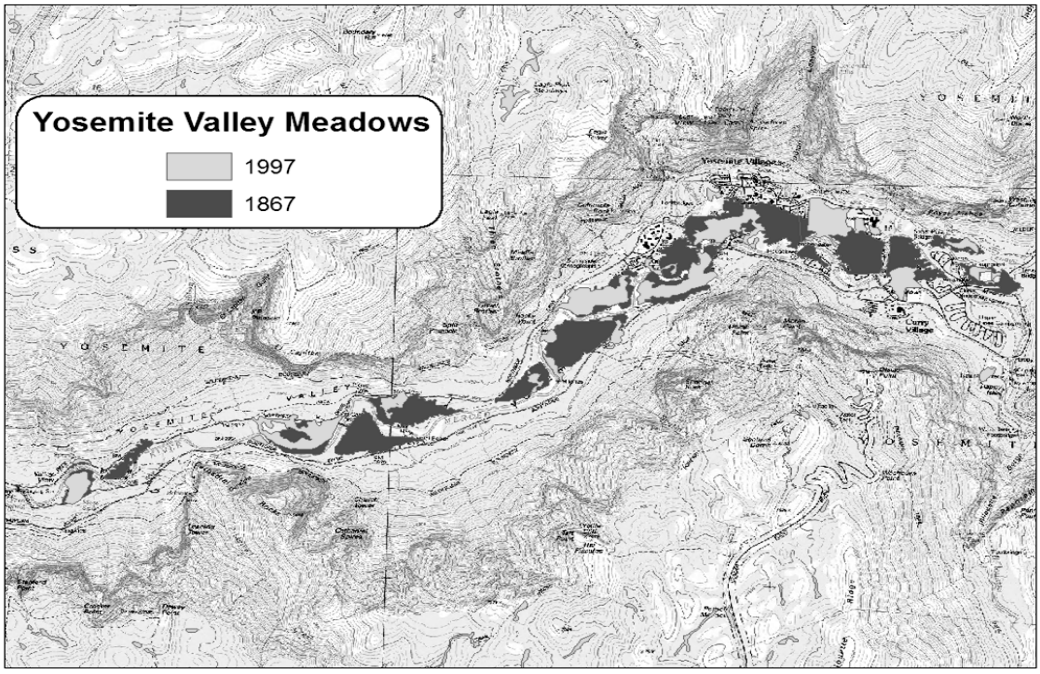

Figure III-3. Yosemite Valley Meadow Changes Through Time (Fischer 2009)

Meadows are a vegetation type and can be a cultural landscape because many meadows were intentionally cultivated and maintained (Ernst 1943, 1961; Anderson 1993). Cultural actions and traditions kept meadows open and have played a larger role in meadow dynamics than natural processes. American Indians burned meadows frequently, and chopped or pulled seedlings and saplings. Meadows, along with black oak, have provided subsistance and material for the people of the Valley for centuries. Meadow maintenance has historically taken place in the park. Tens of thousands of saplings and seedlings have been removed from meadows in the park by the NPS, the Civilian Conservation Corps, and other organizations, mostly in east Yosemite Valley and Tuolumne Meadows (Ernst 1943, 1961; NPS 2004b, 2008d).

Meadows in the Valley were commonly used for car camping in the 1920s, but in 1932, “moral ditches” were dug to protect meadows and keep campers off (Gibbens and Heady 1964). Valley campground boundaries were established and delineated in the 1930s (Gibbens and Heady 1964). By 1958, anywhere from 8,800 to 12,000 people were recorded camping each night in the Valley during the summer months (Gibbens and Heady 1964).

Existing Policies

The NPS is charged with maintaining all historically significant structures, buildings, and landscapes to prevent any degradation of significant characteristics. The spatial character of landscapes and the views, whether intended by design or incidental, from buildings and landscapes can be significant characteristics and must be maintained (Birnbaum and Peters 1996).

Historical resources in Yosemite National Park were identified and evaluated in the *Cultural Resources Management Plan* (NPS 1980b), and procedures were outlined in the 1999 PA (NPS 2003b) by the California State historic preservation officer, the NPS, and the Advisory Council on Historic Preservation, and the accompanying correspondence. A *Historic Resources Study* (NPS 1987) and project-specific reports identify and evaluate structures, buildings, and landscapes not addressed in those earlier documents.

Historic Districts

The National Park Service Cultural Landscape Inventory database lists over 40 historic landscapes that have been inventoried, or found to be eligible, within the potential project area of this plan, and 65 recognized cultural landscapes within Yosemite National Park (NPS 2009d). There are almost 600 historic buildings and structures within the park (NPS 2009b). There are far too many to discuss individually, but these landscapes, structures, and buildings often fall with the boundaries of historic districts that have been identified and defined through cultural landscape inventories or cultural landscape reports or nomination forms to the NRHP. Some of these are listed below.

Yosemite Valley Historic District: The *Yosemite Valley Historic District: National Register of Historic Places Nomination* (Carr 2006) recognizes the national level of the historical significance of the Valley as a cultural landscape, from American Indian occupation, including the associated resource management, to 1945. Specific meadows in Yosemite National Park are listed as contributing features to the historic cultural district, and the following meadows are listed due to "the iconic significance of the meadows as elements of Yosemite scenery."

- Bridalveil Meadow
- El Capitan Meadow
- Slaughterhouse Meadow
- Sentinel Meadow
- Leidig Meadow
- Cook's Meadow
- Ahwahnee Meadow
- Stoneman Meadow
- Lamon Meadow

Other contributing vegetation types listed include those in Lamon Orchard and Hutching Orchard.

The Yosemite Valley Historic District also includes numerous structures and facilities representing the residential and administrative core. Many historic sites and structures within Yosemite Valley have been singled out for their significance and are either National Historic Landmarks or listed in the NRHP. Three of the five National Historic Landmarks in Yosemite National Park are in the valley: The Ahwahnee, the LeConte Memorial Lodge, and the Rangers' Club and garage. The remaining two, Parsons Memorial Lodge and the Wawona Hotel, are in Tuolumne Meadows and Wawona, respectively. Landmark status reflects the highest level of historic significance.

Yosemite Village includes all periods of NPS architecture and includes fine examples of Rustic and Mission 66 architecture. Structures from the period of management by the U.S. Army also exist here. Many of these landscapes, buildings, and structures have remarkable views and vistas of Half Dome, Yosemite Falls, various meadows, the Merced River, and other natural wonders. These views are listed as contributing features, or have the potential to be listed as such.

Buildings such as The Ahwahnee were built to capture great views without dominating the landscape. The Ahwahnee is intended to be on the edge of a meadow and to blend into the surrounding forest (Tresidder 1927). This allows the building access to numerous vistas across open meadows while preventing the building from visually dominating its environment. Vistas include the giant window above the Queen Elizabeth Table in the dining room, which offers a spectacular view of Yosemite Falls (Carr 1998), and the Reflecting Pool at the entrance, meant to reflect Yosemite Falls. These were purposeful and documentable design decisions; the intention was to have the built environment focus on the natural environment.

The architects of other structures may not have had particular vistas in mind, but some of these buildings have taken on significance because of a vista. A noncontributing structure, the Sentinel Bridge, has a significant vista of Half Dome and is a popular spot from which visitors can watch the sunset reflected on the dome's face. The specific vistas, and potential vistas, found in the Valley are too numerous to list individually, but many are part of the 2009 survey conducted in preparation for this plan (NPS 2010b).

The 1980 *General Management Plan* (NPS 1980a) identified eleven scenic icons that are closely associated with the famous vistas in the Valley. These are Half Dome, Yosemite Falls, Bridalveil Fall, El Capitan, Three Brothers, Cathedral Rock and Spires, Sentinel Rock, Glacier Point, North Dome, Washington Column, and Royal Arches. The value of these icons is based on a survey of photographs by five 18th century artists, and other contemporary factors (NPS 1980a). The GMP went on to arrange the Valley into three scenic categories based on their scenic qualities and views of these icons. The resulting analysis divided the Valley into scenic classes "A," "B," and "C" (see Figure III-4). Scenic "A" areas are highly valued, and are commonly chosen by historic photographers and current visitors. Scenic "B" areas are less commonly chosen. Scenic "C" areas have only minor scenic value. The analysis indicates that most of the Valley is a highly valued or a valued scenic resource (NPS 1980a).

Camp Curry Historic District (proposed): The *Cultural Landscape Report, Camp Curry Historic District, Draft* (NPS 2009a) includes several contributing structures. The tent cabins constitute the most significant and intact tent cabin complex left in the national park system. Views and vistas of Half Dome, North Dome, Glacier Point, Royal Arches and Washington Column are contributing factors. These views are generally from the central visitor's area and from the historic Post Office to Half Dome. The vista through the original camp sign into Stoneman Meadow is also noted.

Glacier Point Road Historic District: This district includes Glacier Point, Glacier Point Road, and Badger Pass. The original road up to Glacier Point was completed by 1875, and James McCauley had built the Mountain House hotel at Glacier Point by 1878. Glacier Point is one of the most popular and panoramic vistas in the park; a visitor can view to the west, down Yosemite Valley, north, to Yosemite Falls and Tenaya Canyon, east, to Half Dome and Vernal and Nevada falls, and south, to the Clark Range. The structures at Glacier Point have changed numerous times over the past decades, but the dramatic vistas have remained the most popular features (DuBarton 2007). Glacier Point Road is discussed further with other major park roads.

Tuolumne Meadow Historic District: The 2007 *Cultural Landscape Inventory* (NPS 2007c) lists the spatial qualities and vegetation of the meadow as contributing significantly to the character of the historic district. In addition, the views into the meadow from the meadow out to the surrounding mountains, and views along Tioga Road, are contributing. The National Historic Landmark Parson's Lodge is included in this district.

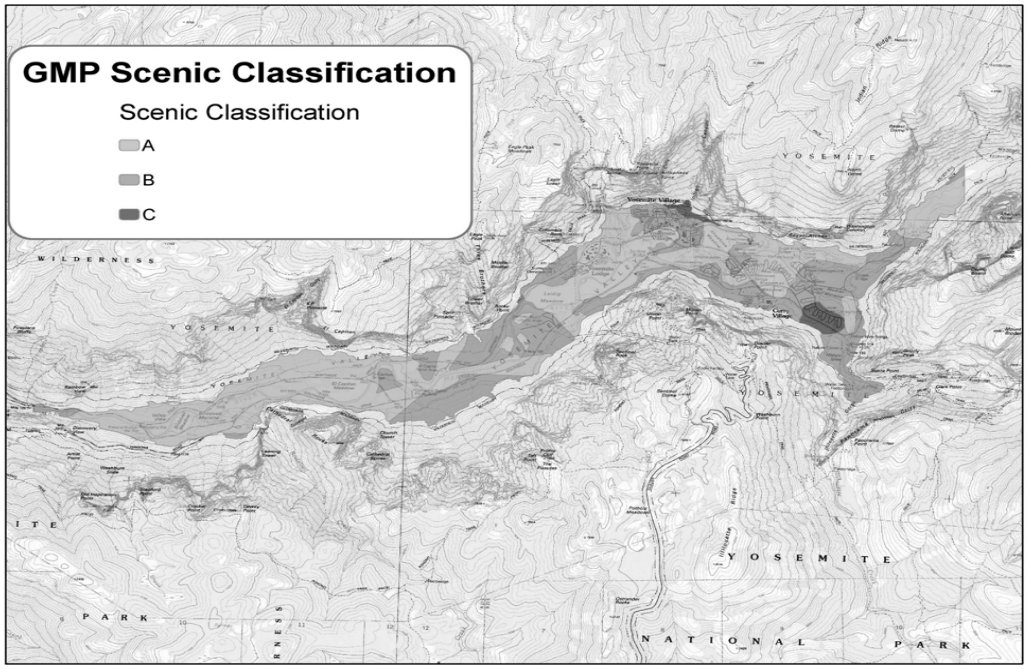

Figure III-4. GMP Scenic Classification Map of Yosemite Valley (NPS 1980)

Hetch Hetchy Historic District (proposed): This district is located in the northwest portion of the park north of Mather. O'Shaughnessy Dam and the Hetch Hetchy Road are part of this district and fall within the affected area of this plan. This area is unique in the park for many reasons, but as a cultural landscape it is unique because of the dominance of a large concrete built structure and associated reservoir, and because much of what is extant was built by the City of San Francisco and not the National Park Service (NPS 2008c).

Although these roads and structures were not necessarily built with vistas in mind, there are vistas that potentially contribute to the significance of this district. The 2008 *Hetch Hetchy Cultural Landscape Inventory Draft* (NPS 2008c) does identify views of the dam, Poopenaut Valley, Wampama Falls, and the geologic formations around the reservoir and district as being significant contributing features.

Mariposa Grove: Famously defined by its vegetation, the Mariposa Grove (originally the Grove of Big Trees) is near the southern entrance to Yosemite National Park. Part of the original land set aside in 1864, the grove is famous for the large and majestic giant sequoia (*Sequoiadendron giganteum*) groves found there. Although not frequently associated with vistas, the grove has several middle ground views that are significant. These vistas are described further in the *Cultural Landscape Inventory: Mariposa Grove* (NPS 1999), and include points from which a visitor can perceive an entire tree at once, such as the Grizzly Giant.

Wawona Point, at 6,810 feet in elevation, provides dramatic views of the surrounding mountains, forest, and meadow. Extensive vista clearing was done in 1932, and walls and railings were added. The vista to the east from this point has since grown in, but is still open to the west, north, and south (NPS 1999).

Other Historic Vistas: Not included with these historic districts are numerous other landscapes, buildings, and structures that are outside of the potential project area, not known to have significant contributing vistas, or not sufficiently inventoried at this time. Historic vista points, either intended or incidental, take advantage of the great beauty found throughout the park. This plan is not meant to be a comprehensive survey of vistas in cultural landscapes. Additional vista points might be added within the potential project area in the future as more research is done and information acquired.

Roads

Each of the roads in Yosemite National Park has a unique and interesting history that begins with the first stagecoach road built in 1871 (portions later became part of the Yosemite Valley Loop Road) and continuing to the Mission 66 reconstruction and realignment of the final segment of Tioga Pass Road in 1960 (Quin 1991). The first toll roads leading into the park were established in 1874 and allowed horse-drawn stages, rather than only horseback access. In 1908, the Yosemite Valley Railroad was completed to El Portal at the park's western boundary, and a connecting road was completed to the Valley (Quin 1991). Automobiles did manage to make it into the park in 1900, but had been banned by 1907; they were allowed in again in 1913, and soon became the favorite mode of transportation (Quin 1991).

Principles and standards for building roads in the national parks began with an agreement of understanding between the NPS and the Bureau of Public Roads in 1925 (Carr 1998). These standards were developed to allow tourists better access to the park and to allow them to see the dramatic scenery around them without leaving their cars. Road designers also sought to use a rustic design aesthetic to blend into the landscape and minimize the negative visual impact (Carr 1998). Turnouts were built along roads, some to better protect a particular vista, creating a more substantial viewing area and reducing possible visitor damage (Vint 1944). Many of the vistas identified in preparation of this EA are along one of the park's major roads: Valley Loop Road, Big Oak Flat Road, Tioga Pass Road, Wawona Road, El Portal Road, Hetch Hetchy Road, or Glacier Point Road (NPS 2010b).

The major roads in the park are cultural resources because they contribute to the history of Yosemite National Park and are all potentially eligible for listing in the *National Register of Historic Places*. Although segments of each road were built at different times, many current road alignments originated after the agreement with the Bureau of Public Roads in 1925 (Table III-10).

Glacier Point Road has been determined eligible for nomination to the *National Register of Historic Places*. This road is representative of the ideas developed during the early history of the park regarding preserving scenic beauty while providing access so that people could enjoy it. The road was built specifically to provide access to the spectacular Valley and subalpine vistas at Glacier Point. The present road was completed in 1936, replacing the original wagon road built in 1882. The road passes through forested land, offering an occasional open view into a meadow and a striking panorama on the way to Glacier Point.

The distant vistas to El Portal and down the Merced Canyon to the west are situated at three turnouts close together about two miles from Chinquapin Flat. Dynamic vistas looking east down the road to Merced Peak and Horse Ridge are located about five and seven miles farther on, respectively. Overlooks to Mount Starr King and the Clark Range are situated about a mile after those. Washburn Point is just south of Glacier Point and offers similar vistas, and was significantly reconstructed in 1963 to expand parking and "improve the view" (DuBarton 2007).

Wawona Road is the principle park entrance in the south. The first Wawona Road was built in 1875 and meets the current road, completed in 1933, close to Wawona. The road passes through a forested landscape, winding on its way to the Valley. There are occasional openings at the National Historic Landmark Wawona Hotel, at the Wawona golf course, at Chinquapin where it meets Glacier Point Road. Openings also allow the South Fork of the Merced River and the Chowchilla Mountains to be seen (Quin 1991).

Table III-10. Completion dates of major road segments

Road	Segment	Date of latest alignment completion
Tioga Pass Road	*Crane Flat to McSwain Meadow*	*1939 (Greene 1987)*
	McSwain Meadow to Cathedral Creek	*1961 (Quin 1991) (Greene 1987)*
	Cathedral Creek to Tioga Pass	*1934 (Greene 1987)*
Wawona Road	*Wawona Road*	*1933 (Quin 1991) (Greene 1987)*
Glacier Point Road	*Chinquapin Flat to Bridalveil Creek*	*1933 (DuBarton 2007)*
	Bridalveil Creek to Mono Meadow	*1882 with minor changes to curves in 1933 (DuBarton 2007)*
	Mono Meadow to Ostrander Rocks	*1933 (DuBarton 2007)*
	Ostrander Rocks to Glacier Point	*1882 with minor changes to curves in 1933 (DuBarton 2007)*
El Portal Road	*Road*	*1908 (Quin 1991)*
	Turnouts	*1932 (Quin 1991)*
Hetch Hetchy Road	*Mather Entrance to Hetch Hetchy*	*1925 (Quin 1991)*
	Loop at Hetch Hetchy	*1928 (Quin 1991)*
Big Oak Flat Road	*El Portal Road to Crane Flat*	*1940 (Quin 1991)*
	Crane Flat to Park Entrance	*1962 (Quin 1991)*
Valley Loop Roads	*Pohono Bridge*	*1927 (Quin 1991)*
	Clark's Bridge	*1928 (Quin 1991)*
	El Capitan Crossover and Bridge	*1933 (Quin 1991)*
	Clark's Bridge	*1928 (Quin 1991)*
	Sugarpine Bridge	*1928 (Quin 1991)*
	Happy Isles Bridge and road between access roads to Nature Center and to Mist Trail	*1929 (Quin 1991)*
	Stoneman Bridge	*1932(Quin 1991)*
	Bridalveil Creek Bridge	*1933 (Quin 1991)*
	Sentinel Bridge Drive	*1956 (Quin 1991)*
	Northside Drive Yosemite Creek Bridge to east of Rocky Point	*1956 (Quin 1991)*
	Sentinel Bridge	*1994 (plaque on bridge)*
	Remaining Valley Loop Roads	*1928 (Greene 1987)*[2]

[1] Segments between Chowchilla Road and the South Fork of the Merced River and at Chinquapin Flat likely follow 1875 alignment (Quin 1991)

[2]The general location of Northside and Southside drives may be in similar locations to roads from as early as 1878, but this is not well documented. Significant paving and modernization of the Valley roads were completed by 1928 (Greene 1987). Minor segments were rebuilt and possibly realigned due to flooding damage after this time as well.

As the road nears the Valley, it winds around Turtleback Dome and through the Wawona Tunnel. Emerging at the east end of the tunnel, visitors can revel in the dramatic landscape of Yosemite Valley. Visitors experience the most dramatic vista in the park at the viewing area. Tunnel View has a vista similar to other historic vistas that have been a part of past roads and trails from Wawona. The Old Wawona Road's dramatic vista at Inspiration Point revealed the Valley farther up in elevation from the current Tunnel View. Old Inspiration Point is higher and east off the Pohono Trail, where the Mariposa Battalion reportedly first saw Yosemite Valley.

The El Portal Road has been determined eligible for nomination to the *National Register of Historic Places*. It enters the western side of the park through the Merced Canyon. Completed in 1926, it connected with the All-Year Highway, so named because it lacked the deeper and more frequent snows found on the other, higher roads (Yosemite Association 1989). Portions of the road were rebuilt in 2007 following flooding (DOT 2007). Confined in the canyon, it provides few opportunities for viewing distant vistas, but has more or less continuous views of the Merced River and the surrounding granite walls. Periodic roadside pullouts and interpretive opportunities focus on the Merced River and geology.

Outbound from the park there are a few distant glimpses west, down the canyon, near the park boundary. The more famous points are the Arch Rock, near the park entry where inbound cars pass through, and the turnout to view the base of Cascade Falls (Yosemite Association 1989).

Big Oak Flat Road enters the park to the north of El Portal Road at the western boundary. Most of the road was relocated during the 1930s and completed by 1940. The new road is a good example of the NPS standards: It incorporates sweeping turns and easier grades, takes advantage of vistas where they occur, and was designed to blend into the landscape through using native materials and tunnels instead of large cuts (Quin 1991).

The vistas on the road show broad and distant views at North Country View near Hodgdon Meadow and Big Meadow at Foresta, offer occasional views cut through roadside trees to reveal the distant mountain ranges and San Joaquin Valley to the west, and provide many opportunities to see into the forests and small meadows around Crane Flat. Some of the more dramatic vista is situated at the eastern end of the road before the descent down to the Merced River and shows prominent Yosemite Valley features such as Half Dome and Bridalveil Fall.

The new road replaced the hazardous "Zig Zag Switchback" that descended down to the Valley floor. The original toll road was the second road to reach the Valley in 1874. The old route could be driven up until 1945, when rockslides closed it to vehicles permanently, but it can still be accessed by hikers (Yosemite Association 1989).

Hetch Hetchy Road, as stated previously, is different from other roads because it was not built by the NPS. It was given to the NPS to maintain by the City of San Francisco. Originally a railroad bed to supply the dam construction, it was paved after the dam construction was completed in 1938. Many of the other auxiliary roads were absorbed into the parks as trails (NPS 2008c).

Tioga Road is the only road in the park to pass through the east boundary of the park and over the Sierra Crest. It is the most scenic road outside of the Valley, surpassing any other park road in variety. That variety includes: near vistas into meadows and forests; distant, wide vistas of mountains, ranges, and lakes; and a vista across the largest subalpine meadow in the Sierra. Exfoliating granite surfaces along the road provide a unique view of the geologic processes at work in Yosemite. The road's history is complex; it has been constructed, abandoned, realigned, and reconstructed from 1883 to 1961 (Quin 1991).

The road was originally constructed by the Great Sierra Consolidated Silver Company to transport goods and ore to and from silver mining operations near Tioga Pass. The road converted portions of the ancient trading route known as the Mono Trail that provided a way across the Sierras for the west-slope Miwok and east-slope Paiute tribes, via Mono Pass. The original road was abandoned only a year later.

It was purchased by Stephen Mather and his associates, and donated to the park. It was significantly rebuilt between 1936 and 1939 with increased width and larger radii curves (Quin 1991). The current road west of White Wolf is completely different from the original and meets Big Oak Flat Road at Crane Flat instead of farther north and west at Hodgdon Meadow (Quin 1991) (USGS 1963). East of White Wolf the reconstructed road generally follows similar routes, but rarely in the exact location. The final major construction on Tioga Road took place from 1958 to 1961 as part of the Mission 66 effort when the road between McSwain Meadow near White Wolf and Cathedral Creek west of Tuolumne Meadow was improved and relocated (Quin 1991).

The Valley Loop Road is the most complicated road and has segments that are possibly the oldest in the park. Although stage roads had not yet reached the Valley, a stage road was built in the Valley by 1871 when Galen Clark packed a coach in and began offering tours (Quin 1991). The Grand Carriage Drive was finished in 1882; it was a loop road that followed the northern and southern limits of the Valley (Greene 1987). Numerous changes and additions were made to the roads in the Valley floor after that time, and the majority of the present Valley Loop Road was in place by 1928, although the specifics concerning the times at which segments of the road were completed are not well documented. Flooding damaged the road in 1937, 1950, and 1997, and it has been repaired or repaved as needed (Greene 1987). A comprehensive repaving project for the Valley Loop Road was undertaken in 2006 (NPS 2005b).

Yosemite Valley is highly scenic (NPS 1980a) and offers numerous vistas to some of the grandest and most well known views in the world. The Valley is many visitors' primary destination, and sightseeing is the primary activity for most (NPS 2008e). The scenic icons identified in the 1980 GMP (NPS 1980a) are seen most frequently and at numerous angles from the Valley Loop Road and its associated turnouts.

Environmental Consequences

Methodology

Historic properties were analyzed qualitatively, in accordance with 36 CFR 800 criteria of effect, based on the modifications that would be made to character-defining features (features that qualify the property for inclusion in the NRHP).

Type of Impact: Under the NHPA, impacts on cultural landscapes are characterized as having no effect, an adverse effect, or no adverse effect. A determination of adverse effect results when the proposed action directly or indirectly impacts any of the characteristics of the historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

Alternative 1: No Action

Analysis

Under the No Action alternative, Yosemite National Park would continue vista management on a case-by-case basis. Vegetation would continue to obscure vistas and existing impacts on historic structures, buildings, and cultural landscapes. Vistas are a contributing characteristic in many historic structures, buildings, and cultural landscapes, and are documented in many NRHP nomination forms, historic structure reports, cultural landscape reports, cultural landscape inventories, and other such documents. Vistas could potentially be lost, if obscuring vegetation establishes to the point of creating critical habitat that could not be removed due to natural resource considerations. Potential for adverse effect exists.

Cumulative Impacts

Cumulative impacts on historic structures and cultural landscapes are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region.

Past development, visitor use, and natural events have resulted in adverse effects on some historic resources, buildings and cultural landscapes. Over time, structures and sites such as roadside turnouts, historic landmarks, buildings, road and trail segments, bridges, mining complexes, railroad, historic tourist facilities and campsites have been damaged from development, use, and natural processes, including fire.

Present actions that affect historic and cultural landscape resources include the *Fire Management Plan* (FMP) and the *Invasive Plant Management Plan* (IPMP). These plans seek to reestablish or stabilize park natural vegetation communities through the use of prescribed burns, wildland fire activities, or invasive plant control methods. Other present park projects include the Tioga Road and Generals Highway Rehabilitation and the *Ahwahnee Comprehensive Plan.* The Tioga Road project would selectively clear adjacent to the Tioga Road and provide a more open and scenic driving experience. The *Ahwahnee Comprehensive Plan* seeks to make necessary improvements to the building and cultural landscape while preserving its contributing features and historic value as a Landmark. Present actions will likely have no effect. Any potential adverse effect on the cultural or historic value would be mitigated under the 1999 PA (NPS 2003b).

Reasonably foreseeable planning efforts include the "Merced River Wild and Scenic Comprehensive Management Plan" and the "Tuolumne River Wild and Scenic Comprehensive Management Plan." These plans will affect decision-making on management actions within the river corridors, and will likely offer some additional protection in the identification of important historic resources within river corridor boundaries. Increased visitation to Yosemite will likely occur as a result of increased population growth. In addition, the park will likely continue identification, documentation, and nominations of such historic structures, buildings, and landscapes through the NRHP, historic structures reports (HSR), cultural landscape inventories (CLI), and cultural landscape reports (CLR), as well as other related documents. Identification and documentation are critical steps in the protection of cultural resources. Future actions will likely have no effect or will be mitigated under the 1999 PA (NPS 2003b).

Alternative 1 would not alter the current impacts on historic structures, buildings, and cultural landscapes. Overall, projects that could have an adverse cumulative impact on historic structures, buildings, and landscapes could be mitigated by implementing the 1999 PA (NPS 2003b). These projects, when combined with Alternative 1, are expected to have no adverse effects.

Impairment

Alternative 1 would not impair the park's historic structures, buildings, and cultural landscapes for future generations.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. The VRA approach to vista prioritization assesses and compares all vistas based on a structured set of criteria. A vista associated with a historic site or cultural landscape receives a higher value; it is a small factor, but the

process ensures that it is considered in assessing vistas. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment.

In not using additional protections of Ecological Conditions to guide management actions, vistas could be cleared more aggressively, and views could be reestablished in a manner that would bring them closer to a historic condition.

This alternative would increase park vista clearing and management activities, which could affect historic structures, buildings, and cultural landscapes. Vista management work done by crews could cause unintentional adverse effects on historic structures and landscapes, such as damage to properties through the use of heavy equipment and falling trees, but that potential is minimized through current park requirements, procedures, practices, and mitigations called for in this document. The annual work plan review would identify cultural resource concerns and provide a framework to avoid or minimize and mitigate potential adverse effects on historic structures and cultural landscapes. For example, orchards would be clearly identified and avoided. If adverse effects could not be avoided or mitigated, the vista would not be managed. This alternative would have no adverse effect.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park historic structures and cultural landscapes would be the same as in Alternative 1. When considered with cumulative impacts, Alternative 2 would have no effect on historic structures, buildings, and cultural landscapes. Potential adverse effects on historic structures, buildings, and landscapes could be mitigated by implementing the 1999 PA (NPS 2003b) through the annual work plan mitigation.

Impairment

Alternative 2 would not impair the park's historic structures, buildings, and cultural landscapes for future generations.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas.

The VRA approach to vista prioritization assesses and compares all vistas based on a structured set of criteria. A vista associated with a historic site or cultural landscape receives a higher value; it is a small factor, but the process ensures that it is considered in assessing vistas. Management actions would be further evaluated using Ecological Conditions. The examination of Ecological Conditions could restrict vista clearing actions when compared with other alternatives.

This alternative would increase park vista clearing and management activities, which could affect historic structures, buildings, and cultural landscapes. Vista management work done by crews could cause unintentional adverse effects on historic structures and landscapes, such as damage to properties through the use of heavy equipment and falling trees, but that potential is minimized through current park requirements, procedures, practices, and mitigations called for in this document. The annual work

plan review would identify cultural resource concerns and provide a framework to avoid or minimize and mitigate potential adverse effects on historic structures and cultural landscapes. For example, orchards would be clearly identified and avoided. If adverse effects could not be avoided or mitigated, the vista would not be managed. This alternative would have no adverse effect.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park historic structures and cultural landscapes would be the same as in Alternative 1. When considered with cumulative impacts, Alternative 3 would have no effect on historic structures, buildings, and cultural landscapes. Potential adverse effects on historic structures, buildings, and landscapes could be mitigated by implementing the 1999 PA (NPS 2003b) through the annual work plan mitigation.

Impairment

Alternative 3 would not impair the park's historic structures, buildings and cultural landscapes for future generations.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

Under Alternative 4, vista management actions would occur with Professional Team Assessment used to prioritize vistas and Scenic Value used to determine management actions. The Professional Team Assessment approach to vista prioritization would assess vistas on a case-by-case basis, using appropriate criteria determined by the vista managers. This alternative would be the most flexible for future project managers and would consider 181 sites for initial clearing and continue maintenance. If assessment criteria chosen by vista managers are based on the cultural importance of the site, vistas associated with historic structures and cultural landscapes may be more likely to be managed.

This alternative would increase park vista clearing and management activities, which could affect historic structures, buildings, and cultural landscapes. Vista management work done by crews could cause unintentional adverse effects on historic structures and landscapes, such as damage to properties through the use of heavy equipment and falling trees, but that potential is minimized through current park requirements, procedures, practices, and mitigations called for in this document. The annual work plan review would identify cultural resource concerns and provide a framework to avoid or minimize and mitigate potential adverse effects on historic structures and cultural landscapes. For example, orchards would be clearly identified and avoided. If adverse effects could not be avoided or mitigated, the vista would not be managed. This alternative would have no adverse effect.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park historic structures and cultural landscapes would be the same as in Alternative 1. When considered with cumulative impacts, Alternative 4 would have no effect on historic structures, buildings, and cultural landscapes. Potential adverse effects on historic structures, buildings, and landscapes could be mitigated by implementing the 1999 PA (NPS 2003b) through the annual work plan mitigation.

Impairment

Alternative 4 would not impair the park's historic structures, buildings, and cultural landscapes for future generations.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

Under Alternative 5, vista management actions would take place, with Professional Team Assessment used to prioritize vistas and Ecological Conditions used to determine management actions. The Professional Team Assessment approach to vista prioritization would assess vistas on a case-by-case basis, using appropriate criteria determined by the vista managers. If assessment criteria chosen by vista managers are based on the cultural importance of the site, vistas associated with cultural landscapes may be more likely to be managed. Management actions would be evaluated using Ecological Conditions. The examination of Ecological Conditions could restrict vista clearing actions when compared with other alternatives.

This alternative would increase park vista clearing and management activities, which could affect historic structures, buildings, and cultural landscapes. Vista management work done by crews could cause unintentional adverse effects on historic structures and landscapes, such as damage to properties through the use of heavy equipment and falling trees, but that potential is minimized through current park requirements, procedures, practices, and mitigations called for in this document. The annual work plan review would identify cultural resource concerns and provide a framework to avoid or minimize and mitigate potential adverse effects on historic structures and cultural landscapes. For example, orchards would be clearly identified and avoided. If adverse effects could not be avoided or mitigated, the vista would not be managed. This alternative would have no adverse effect.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park historic structures and cultural landscapes would be the same as in Alternative 1.When considered with cumulative impacts, Alternative 5 would have no effect on historic structures, buildings, and cultural landscapes. Potential adverse effects on historic structures, buildings, and landscapes could be mitigated by implementing the 1999 PA (NPS 2003b) through the annual work plan mitigation.

Impairment

Alternative 5 would not impair the park's historic structures, buildings, and cultural landscapes for future generations.

VISITOR EXPERIENCE AND RECREATION

Affected Environment

Yosemite National Park is the third most visited national park in the national park system, constituting 1.25% of all visitation to park units (NPS 2008e). As shown in Table III-11, visitation in the last fifteen years has ranged from 3.2 million to over 4 million visitors annually. The majority of the park visitation occurs from May through September, constituting 68% of total annual visitation. This concentration of visitor use in the summer months can create noticeable issues related to crowding and congestion on roadways and at key attraction sites. These conditions have been well documented, most notably in Yosemite Valley (David Evans 2008), but can occur in other locations throughout the park and within locations covered in the scope of the SVMP.

The extent to which the amount of visitor use impacts the quality of visitor experience has been studied at defined attraction sites throughout Yosemite Valley (Manning 1998; Lawson 2009). Since the SVMP seeks to address primarily frontcountry vistas, the major focus of visitor use would include roadside vistas. Some vistas under this plan are also associated with trails and historic structures and buildings. As a result, much of this section will focus on known visitor use patterns, experiential dimensions of visitor use, and the known impacts that can affect visitor experience and recreation.

Table III-11. Annual recreational visits in Yosemite from 1994 to 2008

Year	Recreational Visitors
2008	3,431,514
2007	3,503,428
2006	3,242,644
2005	3,304,144
2004	3,280,911
2003	3,378,664
2002	3,361,867
2001	3,368,731
2000	3,400,903
1999	3,493,607
1998	3,657,132
1997	3,669,970
1996	4,046,207
1995	3,958,406
1994	3,962,117

At some of the most iconic attraction sites in Yosemite Valley, previous studies have noted a positive relationship between vehicle traffic on roadways and crowding at attraction sites (Lawson 2009; David Evans and Associates 2008). Thus, it is impossible to discuss issues related to recreation and the visitor experience without mentioning the effect that transportation systems play in shaping such experiential conditions. Additionally, the vehicle volume data that have been collected through these studies are valuable to gauge expected use levels at vistas that could be considered for action within this plan.

Recreation Activities

Park visitors engage in a diversity of recreation and leisure activities, as shown in Figure III-5 (Littlejohn, Meldrum, and Hollenhorst 2006). Sightseeing/taking a scenic drive (87%) is the most commonly mentioned activity that visitors participate in while at Yosemite. Additionally, 60% of visitor groups stated that sightseeing/taking a scenic drive was the primary activity in which they participated while at the park. With such an emphasis on scenic qualities and driving surrounding the park's visitor experience, it is important to note the differences between factors based on vehicles and on pedestrians in recreation.

Transportation Experience

Related to the scenic driving experience in the park, emerging research has been conducted in Yosemite and in other national park units that has identified the dimensions and issues surrounding the visitor transportation experience. These studies demonstrate the importance of scenic driving and suggest that roadways and vehicles are an integral means of experiencing a park, in addition to providing transport. For example, Hallo and Manning (2009) found that automobiles provided visitors with opportunities to view scenery, explore the park, and experience the park with others in Acadia National Park. A similar study conducted in Yosemite National Park found that automobiles provide visitors the freedom to determine their own travel schedule to see what they want, when they want (White and Aquino 2008).

According to these recent findings, transportation systems are an important component of visitors' experience in Yosemite National Park. Scenic vistas along roadways are perhaps the most significant element for visitors partaking in sightseeing activities. Therefore, the maintenance and management of scenic vistas is necessary to enhance and preserve the quality of the visitor experience. However, the maintenance of roadside scenic vistas must also take into account the ramifications regarding vehicle parking, traffic flow, and visitor safety. While these issues are beyond the purview of this plan, there is great potential for altering current traffic and visitor use patterns, which must be considered as part of any scenic vista management action along roadsides.

Pedestrian/Trail Experience

While the importance of vehicle-based experiences must be taken into account when considering visitor experience in Yosemite, much of the visitor experience takes place away from vehicles and roadways. Visitors to Yosemite take part in a vast array of activities including, but not limited to, camping, hiking, swimming, fishing, photography, picnicking, rock climbing, running, wildlife viewing, bicycling, horseback riding, and rafting. These activities all have inherent scenic values, but may or may not take place at identified vista locations identified within this plan. Furthermore, the setting in which each of these activities takes place affects the experience derived by the visitor (Manfredo 1983). Thus, it is important to consider how any management action would affect the visitor experience at a recreation location in order for park managers to provide a diversity of recreation experiences.

To address this issue, a conceptual planning framework called the Recreation Opportunity Spectrum (ROS) has been developed (Clark and Stankey 1979). ROS is a systematic approach to define the spectrum of recreation opportunities provided by a recreation area in order to provide visitors with a variety of recreation experiences. Ultimately, ROS emphasizes the importance of the setting in which

recreation activities take place. The assumption of this approach is that, given a diversity of recreation settings, a corresponding diversity of recreation experiences will be provided (Manning 1999). Therefore, managers need to consider each recreation location as part of larger system of recreation areas in order to serve the diverse needs of the public.

The concepts outlined by ROS are particularly applicable to the active management of scenic vistas. For example, scenic vistas in campgrounds need to be considered differently than roadside pullouts. The removal of too much vegetation in a campground setting may affect the sense of solitude and unnecessarily affect the camping experience. Thus, managers must weigh the importance of a scenic vista with other recreation opportunities offered at a particular recreation location. Moreover, managers must determine how management actions related to a scenic vista fit into the of overall recreation opportunities in the park. Careful consideration of parkwide recreation opportunities will allow managers to distribute scenic vista opportunities throughout the park and not overemphasize any single type of experience (e.g. roadside pullouts).

Interpretation Experience

Yosemite National Park offers a wide variety of interpretative experiences, educational services, and facilities for visitors to enjoy. The National Park Service (NPS), Delaware North Company (DNC), Yosemite Association (YA), and Yosemite Institute (YI) provide a range of interpretative experiences and educational services, including ranger programs, field trips, field seminars, naturalist walks, tours, exhibits, school programs, guided snowshoe walks in winter months, and campfire talks in summer. DNC partners with the NPS to provide open-air tram tours of Yosemite Valley that introduce and discuss some of Yosemite's most famous sightseeing points. These interpretive activities can cover topics such as nature, history, and the culture of the park. Interpretive facilities available to the public include visitor centers, wilderness centers, museums, historic buildings, amphitheaters, an art gallery, and an art activity center. Self-guided interpretation takes place in the visitor center, in the museum, at wayside exhibits, and during tours. Publications and brochures for such interpretive experiences are provided at visitor center locations, as well as at bookstores.

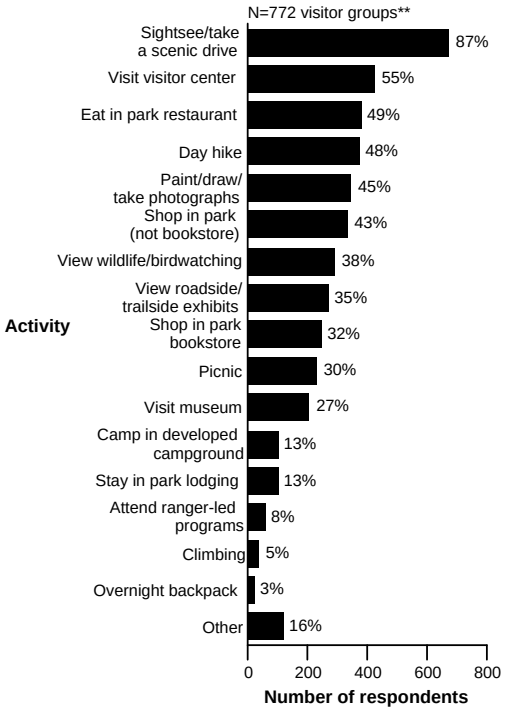

Figure III-5: Summer Season Visitor Activities in Yosemite (Littlejohn et al. 2006)

The goal of park interpretative efforts is to provide unique interpretive opportunities that allow people to make intellectual and emotional connections to the meaning of the park's resources. These connections encourage and foster personal stewardship ethics and broadened public support for preserving and protecting park resources. As stated previously, vista management is important because it allows visitors a way to connect visually with nature.

Yosemite National Park is beginning a comprehensive interpretive plan (CIP). The CIP is necessary to ensure long-term protection of resources through visitor understanding and enjoyment. The final product of this effort will guide interpretation and education in Yosemite National Park.

Environmental Consequences

Methodology

The methodology used to evaluate impacts on visitor experience, recreation, and interpretation was based on scientific literature and/or expert judgment. Several basic assumptions guided these evaluations.

- Alternative vista management strategies may affect the quality of visitor experiences and the character of recreation opportunities in the park in different ways, depending on the type and intensity of management action taken.
- The setting in which recreation activities take place affects the experience of the visitor (Manfredo 1983).
- Recreation locations should be evaluated as part of a larger system of recreation areas, each contributing to the diverse needs of the public (Manning 1999).

Context: This identifies the setting or area within which impacts are analyzed. These can be a localized, regional, or national area of influence. "Localized" is detectable only in the vicinity of the proposed action. "Regional" is detectable on a landscape scale. "National" is detectable on a national scale.

Type of Impact: This analysis identifies impacts on visitor experience, recreation, and interpretation as either beneficial or adverse. Impacts are considered beneficial if implementation of an alternative would enhance the quality of the visitor experience, increase participation or interpretive opportunities, or improve the overall level of service. Impacts are considered adverse if implementation of an alternative would diminish the quality of the experience of, decrease participation in, reduce interpretive opportunities in terms of, or reduce the overall level of service of, visitor recreation, leisure activities, and interpretative opportunities.

Duration of Impact: The duration of an impact is the time required for visitor experiences, recreation, and interpretation opportunities to recover after treatments at vista sites have been implemented. Potential impacts are short-term or long-term. Short-term impacts are those that would occur during SVMP management actions. Long-term impacts are those that would permanently affect the quality of the visitor experience, including recreation and interpretive opportunities, perhaps well after a scenic vista management action has been taken.

Intensity of Impact: The intensity of an impact on visitor experience, recreation, and interpretation is a measure of perceptible changes in opportunities for visitors to participate in desired experiences, including recreation and interpretive opportunities. Impact intensity is characterized as negligible, minor, moderate, or major. Negligible impacts are those that would result in little noticeable change in visitor experience, recreation, or interpretation. Minor impacts would result in changes in desired experiences and interpretive opportunities, but would not appreciably limit or enhance critical experiential characteristics or activity participation. Moderate impacts would change the desired experience or opportunity appreciably, altering critical experiential characteristics and/or activity participation. Major impacts would eliminate or greatly enhance multiple critical characteristics or greatly reduce/increase activity participation or opportunity.

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments.

Standards such as maximum widths and depths for vista clearing would not be specified. Vegetation would continue to obscure the majority of vistas. Scenic viewing is a primary activity for many visitors to Yosemite National Park, and the loss of scenic viewing opportunities would affect the quality of the visitor experience by reducing aesthetic and educational experiential opportunities. In addition, conflicts between pedestrians and vehicles may increase at obscured vista sites near roads as pedestrians search for views of vistas with overgrown vegetation. Vegetation would likely suffer and give a degraded appearance at viewing areas if visitors have to leave paved areas and trample plants and compact soil in search for a view over or around screened or blocked vistas. Vista clearing activity would continue to be minimal; therefore, there would be a long-term minor adverse impact on visitor experience, recreation, and interpretation within the project area.

Cumulative Impacts

Cumulative impacts on visitor experience and recreation are based on analysis of past, present, and reasonably foreseeable future park actions. These impacts are then considered along with the impacts of Alternative 1.

Past actions that have affected visitor experience and recreation include construction of railroads, roads and trails that have eased access to and allow visitors to experience the park. These actions have had a long-term regional beneficial impact on visitor experience and recreation.

Present plans and actions that have affected visitor experience and recreation include the Mariposa *County General Plan*, the *General Management Plan for Yosemite,* the *Fire Management Plan*, the Tioga Trailheads Project, Glacier Point Road Rehabilitation, Rehabilitation of the Valley Loop Road, and Tioga Road and Generals Highway Rehabilitation. The GMP calls for actions such as management of vistas that would be beneficial for visitor use and recreation. The FMP allows actions that may be both beneficial and adverse to visitor experience. Short-term fire management impacts such as smoke and haze may have a short-term adverse impact on the visitor experience, but ecosystems maintained through natural processes would allow for a long-term beneficial impact. Overall, present actions have localized short-term adverse impacts while actions take place, but long-term minor to moderate beneficial impacts on visitor experience and recreation.

Reasonably foreseeable actions that may affect park visitor experience and recreation include the "Tuolumne River Wild and Scenic River Comprehensive Management Plan," the "Merced River Wild and Scenic River Comprehensive Management Plan," Crane Flat Utilities and Communication Data Network, continued historic building and landscape rehabilitation projects, continued ecological restoration projects, increase visitor use, and regional population growth. Increased population growth, coupled with subsequent visitor use, may negligibly adversely affect park sites that receive high amounts of visitor use. The Merced River and Tuolumne River Wild and Scenic comprehensive management plans will likely enhance visitor experience and recreation and have long-term beneficial impacts. Other projects and actions will likely have localized short-term negligible negative impacts, but localized long-term negligible positive impacts when complete.

Past, present, and reasonably foreseeable future actions within the project area would have localized and regional long-term moderate beneficial impacts on visitor experience and recreation. Alternative 1 would have a negligible negative effect on the cumulative impacts on park visitor experience and recreation. Although viewing scenic resources is the primary activity of many park visitors and opportunities would be reduced, other improvements to benefit visitors would continue. Impacts would continue to be local and regional long-term moderate and beneficial.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. The VRA approach to vista prioritization assesses and compares all vistas based on a structured set of criteria. For example, while infrastructure present is a component of the VRA, features such as scenic quality are also important. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment. The Professional Team approach to guiding management actions provides more flexibility, in which vistas could be managed more aggressively with visitor experience in mind.

Vista management actions could include the use of mechanized equipment and prescribed burning. Mechanized tools such as chain saws can emit up to 100 decibels (db) when in use and could degrade the quality of the visitor's experience by affecting a visitor's sense of solitude and/or tranquility. Prescribed burning may emit high levels of smoke and obscure scenic views around the park. Vista management operations may need to close turnouts, roads, or trails temporarily while management actions take place, for visitor safety. Actions such as revegetating sites to improve aesthetics and remove social trails would benefit the visitor and vegetation by providing a clear area to view scenery. Interpretation, recreation, and overall visitor experience would be greatly enhanced and improved. These actions could result in short-term localized minor to moderate adverse impacts, but provide localized long-term moderate beneficial impacts on visitor experience as a result of Alternative 2.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park visitor experience and recreation would be the same as in Alternative 1. Alternative 2 would have a negligible to minor beneficial effect on the cumulative impacts on park visitor experience and recreation. Impacts would continue to be localized and regional long-term moderate beneficial.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. Park staff would clear and maintain about 93 obscured or partially obscured vistas.

The VRA approach to vista prioritization assesses and compares all vistas based on a structured set of criteria. While infrastructure present is a component of the VRA, features such as scenic quality are also important. Management actions would be further evaluated using Ecological Conditions, which would provide less latitude for visitor experience improvement.

Vista management actions would be the same as those described in Alternative 2. These actions could result in short-term minor to moderate adverse impacts, but have localized long-term moderate beneficial impacts on visitor experience as a result of Alternative 3.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park visitor experience and recreation would be the same as in Alternative 1. Alternative 3 would have a negligible to minor beneficial effect on the cumulative impacts on park visitor experience and recreation. Impacts would continue to be localized and regional long-term moderate beneficial.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

Under Alternative 4, vista management actions would take place, with Professional Team Assessment used to prioritize vistas and Scenic Value used to determine management actions. The Professional Team Assessment approach to vista prioritization would assess vistas on a case-by-case basis, using appropriate criteria determined by the vista managers. Vistas could be managed with visitor experience in mind. If assessment criteria chosen by vista managers are based on the greatest numbers of visitors and visitor experience potential of a site, vista management would have a greater beneficial impact when compared with other alternatives. The Scenic Value approach to guiding management actions provides more flexibility, and 181 sites would be considered for initial treatment.

Vista management actions would be the same as those described in Alternative 2. These actions could result in short-term minor to moderate adverse impacts, but have localized long-term moderate beneficial impacts on visitor experience as a result of Alternative 4.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park visitor experience and recreation would be the same as in Alternative 1. Alternative 4 would have a negligible to minor beneficial effect on the cumulative impacts on park visitor experience and recreation. Impacts would continue to be localized and regional long-term moderate beneficial.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

Under Alternative 5, vista management actions would take place, with Professional Team Assessment used to prioritize vistas and Ecological Conditions used to determine management actions. The Professional Team Assessment approach to vista prioritization would assess vistas on a case-by-case basis, using appropriate criteria determined by the vista managers. If assessment criteria chosen by vista managers are based on the recreational importance and visitor experience potential of the site, the visitor experience could be more positively impacted compared with other alternatives. Some sites would not be considered due to Ecological Conditions; this alternative would consider 167 sites for initial management. Management actions would be further evaluated using Ecological Conditions, which would provide less latitude for visitor experience improvement.

Vista management actions would be the same as those described in Alternative 2. These actions could result in short-term minor to moderate adverse impacts, but have localized long-term moderate beneficial impacts on visitor experience as a result of Alternative 4.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects that impact park visitor experience and recreation would be the same as in Alternative 1. Alternative 5 would have a negligible to minor beneficial effect on the cumulative impacts on park visitor experience and recreation. Impacts would continue to be localized and regional long-term moderate beneficial.

ROADS AND TRANSPORTATION

Affected Environment

Yosemite is one of the most highly visited parks in the national park system; more than 3 million people visit the park each year. Since the inception of Yosemite National Park, the viewing of scenic vistas has been a principal activity. Roads in the national park system historically have been, and continue to be, designed with driving experience and vista viewing in mind. Visitors to parks principally use the automobile to access sites and activities (Hallo and Manning 2009).

The most notable scenic views targeted by visitors for sightseeing include: Half Dome and other valley features; Yosemite, Bridalveil, Vernal, and other waterfalls; giant sequoia trees at the Mariposa, Merced, and Tuolumne groves; the mountain peaks of the Sierra along the Tioga Road corridor; and other historic vistas, including Tunnel View, Valley View, and Olmsted Point. In recent visitor use studies conducted in the park (Littlejohn et al. 2006), it was found that 60% of people who visited the park in summer months intended to take a scenic drive to sightsee, and 87% of visitors actually did sightsee by way of taking a scenic drive (NPS 2008e). During winter months, it was found that the most common activity, cited by 84% of visitors, was viewing scenery by taking a scenic drive (NPS 2008e). In terms of transportation methods used, it was determined that 74% percent of visitors used a private or rented vehicle to arrive at the park, 90% of Yosemite visitors drove private or rented vehicles into the park, and 4% arrived at the park by bus (Littlejohn 2006).

Existing Policies

NPS roadways are planned and designed for leisurely sightseeing. They are located with sensitive concern for the environment and designed with extreme care (NPS 1984). Roads in the NPS are collaboratively designed between the NPS and the Federal Highway Department through a 1983 agreement. The agreement declares that

> *the NPS shall be responsible for providing architectural and landscape architectural services to* ***ensure that the highest standards of aesthetics and resource protection*** *are followed in the placement of road prisms and the design of structures appurtenant to park roads and parkways. To the extent possible, the visual impact of roads upon the landscape, and also the view of the landscape from the road are both considered* (1983 Agreement NPS FHWA).

The Federal Highway Administration (FHWA) and its predecessor agencies have been directly engaged in the location, design, and construction of public roads, giving access to and through the national

parks, the national forests, and other areas within the federal domain since 1905 (FHWA 2008). The FHWA considers the aesthetic value of an area as a measure of its visual character and quality, combined with the viewer's response to the area (1983 Agreement NPS FHWA). The FHWA created the "Visual Impact Assessment for Highway Projects" in 1981 (FHWA 1981). Their methodology includes six steps to assess visual impacts:

1. Definition of the project setting and viewshed;
2. Identification of key views for visual assessment;
3. Analysis of existing visual resources and viewer response;
4. Depiction of the visual appearance of project alternatives;
5. Assessment of the visual impacts of project alternatives; and
6. Proposal of methods to mitigate adverse visual impacts.

Alternative Transportation

The visitor attitude toward alternative transportation in Yosemite is mixed. The reasons for visitor attitudes are broad and varied. Reasons range from a perceived lack of freedom and convenience without an automobile to the ease of movement and greater enjoyment of the scenery with alternative transportation (White 2007).

YARTS: The Yosemite Area Regional Transit System (YARTS) began operating in 2000 (Merced 2010). It provides an alternative to driving for over 550,000 passengers traveling in the Yosemite region. Both park visitors and employees ride YARTS to reduce congestion in the park, but also because doing so makes it easier to see the dramatic scenery. The NPS has a program that subsidizes employee commute costs, and about 35% of YARTS riders are commuters. The bus system services Mariposa, Merced, and Mono counties. There are a total of six runs that service the Yosemite area along Highway 140, and there are two runs that service the Yosemite area along Highway 120 East (Merced 2010).

Yosemite Shuttle System: Numerous shuttles throughout the park service highly visited areas. Two shuttles service Yosemite Valley. The Yosemite Valley shuttle provides year-round service around eastern Yosemite Valley, and the Capitan Shuttle operates during peak summer months only, stopping at El Capitan, Four Mile trailhead, and the Valley Visitor Center. There are three shuttles that service the remainder of the park. The Wawona-Mariposa Grove shuttle bus shuttles passengers between Wawona and the Mariposa Grove of Giant Sequoias during peak visitor use season. The shuttle system was created to allow access to the Mariposa Grove during peak season when the parking lot becomes too full. The Badger Pass shuttle bus provides service during winter months between Yosemite Valley and Badger Pass ski area whenever the facilities at Badger Pass are open. The Tuolumne Meadows shuttle bus provides access throughout the Tuolumne Meadows area between the Tioga Pass and Olmsted Point during summer months.

Roads

There are currently seven primary roads within the park: El Portal Road, Wawona Road, Big Oak Flat Road, Tioga Road, Glacier Point Road, Yosemite Valley Loop Road, and Hetch Hetchy Road. These roads add up to a total of 130 miles. All roads are two-lane highways, two of which are closed during the winter months. Of the seven roads, five have park entrance gates: El Portal Road (west entrance), Wawona Road (south entrance), Tioga Road (east entrance), Big Oak Flat Road (north entrance), and Hetch Hetchy.

El Portal Road: Highway 140 enters the park from the west and becomes the El Portal Road from the western boundary to the Pohono Bridge. Primary gateway communities that this road serves

include El Portal, Midpines, Mariposa, Cathey's Valley, and Merced. The Yosemite Area Regional Transit System (YARTS) has a total of six bus runs that service this route. The road ascends the Sierra Nevada foothills from Merced, to the park boundary at El Portal, and descends into Yosemite Valley. This road and the Valley Loop Road lie within the present Merced Wild and Scenic River corridor.

An average of 24% of park traffic enters the park throughout the year along this road, at the Arch Rock entrance station (NPS 2008e). There are three Yosemite Road Guide markers, two road pullouts with interpretive signs, and one trailhead along this road (Yosemite 1989).

Wawona Road: Wawona Road meets Highway 41 at the southwest boundary of the park and comprises a total of 33 miles of Yosemite's roads from the park boundary to Southside Drive near Bridalveil Fall. Access to this road is year-round, although the road can be icy in winter. Primary gateway communities that the road serves include Wawona and Oakhurst. YARTS does not provide bus routes for this road, but the park provides shuttles that service the Wawona area.

An average of 28% of park traffic enters the park throughout the year along this road, at the South entrance station (NPS 2008e). There are 12 Yosemite Road Guide markers along this road, few interpretive signs, and few trailheads (Yosemite 1989).

Big Oak Flat Road: Highway 120 West enters the park from the northwest and meets Big Oak Flat Road at the western boundary. Access to this road is year-round, although it can be icy in winter. The primary gateway community that this road serves is Groveland. YARTS provides limited bus routes for this road during peak summer months. The road runs from the park's north entrance station to the Tioga Road turnoff at Crane Flat, and then to the junction with El Portal Road. It comprises a total of 17 miles of Yosemite's roads.

There are a few pullouts south of Crane Flat and just north of Highway 140 that offer spectacular views of Yosemite Valley. These pullouts are often crowded, which can cause traffic congestion during peak visitation times. Views from above the lower canyon of the Merced River can also be seen from this section of road (Yosemite 1989).

An average of 23% of park traffic enters the park throughout the year along this road, at the Big Oak Flat entrance station (NPS 2008e). There are 12 Yosemite Road Guide markers along this road, few trailheads, and no interpretive signs (Yosemite 1989).

Tioga Road: Highway 120 enters the park from the east, at Tioga Pass, and continues west to the Big Oak Flat Road junction at Crane Flat. It comprises a total of 46.5 miles of Yosemite's roads. Access to this road is seasonal, and it is closed during the winter months. The primary gateway communities that this road serves are Lee Vining and Mammoth Lakes. During peak summer months, YARTS provides limited bus routes for this road that provide a connection between Mammoth Lakes, Tuolumne Meadows, and Yosemite Valley. Considered by many to be one of the most scenic routes across the Sierra Nevada, the Tioga Road was recognized in 1996 by the National Department of Transportation as a National Scenic Byway for its spectacular views. The road offers broad alpine views of meadows, domes, distant peaks, and deep canyons. Notable vista points include Olmsted Point, Tenaya Lake, Tuolumne Meadows, and the view of Lee Vining Canyon at the park's east entrance. This road also provides recreational access to a broad area of the park for both day and overnight use. In 2009, Resources Management and Sciences conducted the *Tioga Trailheads Visitor Use Assessment* of twelve trailheads along the road. Data indicate that half of the trailheads surveyed did exceed capacity for periods during observation in the summer (NPS 2009g).

An average of 23% of park traffic enters the park throughout the year along this road, at the Tioga Pass entrance station (NPS 2010a). There are 39 Yosemite Road Guide markers along this road, as well as numerous interpretive signs and trailheads (Yosemite 1989).

Glacier Point Road: Glacier Point Road starts at Chinquapin on the Wawona Road, about midway between Yosemite Valley and Wawona, and extends 16 miles to Glacier Point. Washburn Point, just south of Glacier Point, is a similarly spectacular vista point that also receives high visitor use. The present road serves as an access road to Badger Pass Ski Resort and numerous trailheads. Access beyond Badger Pass Ski Resort is seasonal and closed during winter months. YARTS does not provide transportation service on this road, but the concessioner offers for-fee tours to Glacier Point from approximately mid-May to late October, as well as complimentary shuttle service to Badger Pass in the winter when the ski area is open. There are 11 Yosemite Road Guide markers along this road, few interpretive signs, and many trailheads (Yosemite 1989).

Valley Loop Road: The Valley Loop Road is located in Yosemite Valley and comprises a total of seven miles of Yosemite's roads. The loop begins at Pohono Bridge and traverses the Valley along Southside Drive to Happy Isles, and then goes back along Northside Drive; it includes several connections between Sentinel Bridge and El Capitan Bridge. The roads are two-lane and one-way to the Visitor Center. From Curry Village eastward, Valley roads are closed to auto traffic; only shuttle buses, bicyclists, and hikers are allowed access. YARTS has numerous bus runs that service select stops along the Valley Loop Road, and there are also two park shuttles that service many stops along the road. The Valley Loop Road is open year-round and provides numerous scenic viewing opportunities. It provides visitors with views of Yosemite Valley's 11 most iconic features. There are 27 Yosemite Road Guide markers along the Valley Loop Road, as well as numerous interpretive signs and trailheads (Yosemite 1989).

Hetch Hetchy Road: Hetchy Hetchy Road was built as an access rail line to O'Shaunessey Dam. The rails were removed and the route paved. The road comprises a total of 16 miles of Yosemite's roads. The Hetch Hetchy Road starts out as the Evergreen Road just north of the Big Oak Flat north entrance. At the Hetch Hetchy entrance station, just east of the Evergreen Lodge, the Hetch Hetchy Road continues northeast to Hetch Hetchy Reservoir and O'Shaunessey Dam (Yosemite 1989).

Only 2% of park traffic enters the park at the Hetch Hetchy entrance station (NPS 2010a). Access to this road is year-round, although it can be icy in winter, and Groveland is the primary gateway community that the road serves. YARTS and the NPS shuttle system do not provide bus routes for this road. There are just five Yosemite Road Guide markers along the road, and there are few interpretive signs or trailheads (Yosemite 1989).

Environmental Consequences

Methodology

This impact assessment uses the judgment of vista management regarding traffic volumes and associated traffic flow, access and circulation, and safety conditions. Transportation impacts are assessed in terms of duration, intensity, and type.

Context: This identifies the setting or area within which impacts are analyzed. These can be localized, regional, or national areas of influence. "Localized" is detectable only in the vicinity of the proposed action. "Regional" is detectable on a landscape scale. "National" is detectable on a national scale.

Duration of Impact: A short-term impact is one that would be created during the implementation phase of the alternative action (e.g., temporary disruption of access created during vista restoration) and would generally last approximately up to a week at any given location. A long-term impact would be created through the permanent change to traffic generation, as well as changes to circulation patterns.

Intensity of Impacts: The intensities of impacts consider whether the impact would be negligible, minor, moderate, or major. Negligible impacts are effects considered not detectable and would have no discernible effect on traffic flow and/or traffic safety conditions. Minor impacts are effects on traffic flow and/or traffic safety conditions that would be slightly detectable, but not expected to have an overall effect on those conditions. Moderate impacts would be clearly detectable and could have an appreciable effect on traffic flow and/or traffic safety conditions. Major impacts would have a substantial, highly noticeable influence on traffic flow and/or traffic safety conditions and could permanently alter those conditions.

Type of Impact: Impacts are considered either beneficial or adverse to traffic flow and/or traffic safety conditions. Beneficial impacts would improve traffic flow and traffic safety by reducing levels of congestion and incidences of vehicle/vehicle, vehicle/bicycle, and vehicle/pedestrian conflicts. Adverse impacts would negatively alter traffic flow and traffic safety by increasing levels of congestion and occurrences of such conflicts.

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. Standards such as maximum widths and depths for vista clearing would not be specified. Vegetation would continue to obscure the majority of vistas. Conflicts between pedestrians and vehicles may increase at obscured vista sites near roads as pedestrians search for views of vistas with overgrown vegetation. Vista clearing activity would continue to be minimal; therefore, there would be a localized long-term minor adverse impact on roads and transportation within the project area.

Cumulative Impacts

Cumulative impacts on park roads and transportation are based on analysis of past, present, and reasonably foreseeable future actions in the Yosemite region. These impacts are then considered along with the impacts of Alternative 1.

Past actions that have affected transportation in the park include the construction of roads and trails. The construction of roads and increased ease of access to the park have created a mix of impacts. The improvement of roads has attracted increased visitation, which has led to increased congestion, delay, and accidents over the long-term. Past actions have resulted in impacts that have been regionally beneficial, but locally moderate adverse on park transportation.

Present plans and actions that affect roads and transportation include: the *Mariposa County General Plan*; the *General Management Plan for Yosemite*; the *Fire Management Plan*; the Tioga Trailheads Project; and the Glacier Point, Valley Loop, and Tioga Road rehabilitations. The FMP allows short-term impacts such as smoke and haze, which may have short-term adverse impacts on roads and transportation. Road rehabilitation projects cause short-term localized minor adverse impacts during construction, but improvements to visibility and safety result in long-term localized minor to moderate beneficial impacts on roads and transportation. Present actions overall have local short-term adverse impacts during action implementation, and minor beneficial impacts over the long-term.

Reasonably foreseeable actions that may affect roads and transportation include continued historic structures and landscape rehabilitation projects, continued improvement to road safety, increased visitor use, and regional population growth. Increased population growth and subsequent visitor use

may negligibly adversely affect roads at park sites that receive high amounts of visitor use. These actions will likely have local short-term minor adverse impacts, but long-term localized beneficial impacts.

Overall, past, present, and reasonably foreseeable future actions have had long-term local minor beneficial impacts on roads and transportation. The continuation of current management practices of vistas could increase pedestrian/car conflicts, but roadways would continue to be improved. The No Action alternative, when considered with cumulative impacts, would continue long-term minor localized beneficial impacts on roads and transportation.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. While the presence of infrastructure is a component of the VRA, features such as scenic quality are also important. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment. The Professional Team Assessment approach to determining management actions would provide more flexibility, in that vistas could be managed more aggressively, or with improving the experience on roads as the primary consideration.

There would be an increase in vista clearing and management under this alternative. Vista management actions would include the use of mechanized equipment and, possibly, prescribed burning. Vista management operations may require the temporary closure of turnouts, roads, or trails during management activities to ensure visitor safety. Prescribed burning may emit high levels of smoke and obscure scenic views around the park. Smoke from wildfire is a contentious issue in Yosemite and can affect access to transportation and roads. Clearing vegetation at turnouts would benefit visitor safety by reducing the chance that a visitor looking for a better photograph or view of a scenic vista would venture into the road. There could also be increased visitor use and associated car traffic at turnouts associated with managed vistas. This would result in localized short-term minor adverse impacts on park transportation, as well as localized long-term negligible beneficial impacts on roads and transportation as a result of implementing Alternative 2.

Cumulative Impacts

Cumulative impacts of past, present, and reasonably future projects would be the same as in Alternative 1. Alternative 2 would likely have negligible effect when compared with cumulative impacts and would continue to produce localized short-term minor adverse impacts, with long-term localized minor beneficial impacts on park roads and transportation.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). The VRA approach compares all vistas based on a structured set of criteria. Once sites were prioritized, the Ecological Conditions at each site would determine the prescription for vegetation clearing. While the presence of infrastructure would be a component of the VRA, features such as scenic quality would also be important. Professional Team Assessment could be more flexible

and may respond to factors such as increased traffic issues more quickly. Park staff would clear and maintain about 93 obscured or partially obscured vistas under this alternative.

Vista management actions would be the same as those described in Alternative 2. This would result in localized short-term minor adverse impacts on park transportation, but also localized long-term negligible beneficial impacts on roads and transportation as a result of Alternative 3.

Cumulative Impacts

Cumulative impacts of past, present and reasonably future projects would be the same as in Alternative 1. Alternative 3 would probably have negligible effect when compared with cumulative impacts and would continue to produce localized short-term minor adverse impacts, along with long-term localized minor beneficial impacts on park roads and transportation.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

Under Alternative 4, vista management actions would take place, with Professional Team Assessment used to prioritize vistas and Scenic Value used to determine management actions. Professional Team Assessment may allow for more flexibility and could respond to factors such as increased traffic issues more quickly. The Scenic Value approach to guiding management actions provides more flexibility, in that vistas could be managed with improving park roads and transportation as a primary goal. This alternative provides the most flexibility, and park staff would consider 181 vista sites for initial action. Vista management actions would be the same as those described under Alternative 2. This would result in localized short-term minor adverse impacts on park transportation, as well as localized long-term negligible beneficial impacts on roads and transportation as a result of Alternative 4.

Cumulative Impacts

Cumulative impacts of past, present, and reasonably future projects would be the same as in Alternative 1. Alternative 4 would probably have negligible effect when compared with cumulative impacts and would continue to produce localized short-term minor adverse impacts with long-term localized minor beneficial impacts on park roads and transportation.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

Vista clearing would occur, using Professional Team Assessment to prioritize vistas and Ecological Conditions to determine management actions. Professional Team Assessment may allow for more flexibility and could respond to factors such as increased traffic issues more quickly. Management actions would be further evaluated using Ecological Conditions, which would limit actions at some sites.

Vista management actions would be the same as those described under Alternative 2. This would result in localized short-term minor adverse impacts on park transportation, but also localized long-term negligible beneficial impacts on roads and transportation as a result of Alternative 5. Park staff would consider 167 sites for initial treatment.

Cumulative Impacts

Cumulative impacts of past, present, and reasonably future projects would be the same as in Alternative 1. Alternative 5 would likely have negligible effect when compared with cumulative impacts and would continue to produce localized short-term minor adverse impacts with long-term localized minor beneficial impacts on park roads and transportation.

PARK OPERATIONS

Affected Environment

The park superintendent is responsible for the overall management, operation, and safety operations of the park. The NPS in Yosemite is organized operationally into eight divisions, each with a functional area of responsibility. Each division plays a part in vista management.

- The Division of Resources Management and Science manages the natural and cultural resources in the park, including the SVMP. This includes the following branches: Vegetation and Ecological Restoration; History, Architecture, and Landscapes; Wildlife Management; Archeology and Anthropology; Physical Science and Landscape Ecology; and Visitor Use and Social Sciences.
- The Division of Project Management oversees all park construction projects, many of which are completed by private contractors. The Division of Project Management also facilitated the environmental assessment and compliance requirements of this SVMP, including American Indian/Section 106 consultation.
- The Division of Planning, administered through the Denver Service Center oversees the general direction of planning in the park, including development of all comprehensive management plan (CMP) documents. The Planning Division Chief is still a part of the park management team, and staff offices remain at Yosemite National Park.
- The Division of Interpretation and Education relates a variety of park issues to the public through visitor center operations, campfire presentations, guided hikes and other outings, public outreach and publications, press relations, museum and curatorial operations, and internet presence. The public perception of park management policies, including those relevant to vista management, is influenced by Interpretation staff.
- The Division of Business and Revenue Management administers concessioner contracts, Commercial Use Authorizations, Special Use Permits, land assignments, the park's volunteer program, and entrance station and campground operations. Many operational oversight functions of this division may be of assistance in the implementation of the SVMP.
- The Division of Administration supports park operations and planning through oversight of all administrative functions, including budget, finance, human resources, information technology, procurement, property, and housing.

- The Division of Facilities Management maintains the park infrastructure, which includes buildings, grounds, roads, trails, forestry, and utilities. The park forester is in this division and would oversee tree removal and contracts for vista restoration. Vista management tree removal could also be overseen by the Visitor and Resource Protection Division fire managers and Division of Resources Management and Science resource managers.
- The Visitor and Resource Protection Division provides oversight of law enforcement, fire management (structural and wildland), Emergency Medical Services (EMS), Wilderness management, Search and Rescue (SAR), telecommunications, and 911 dispatch services. Fire managers play an important role in the restoration of vistas, with specific locations benefiting from the coordination of fire management goals with vista management practices.

Environmental Consequence

Methodology

Impacts were evaluated by assessing changes to park operations that would be needed to perform the actions described for each of the alternatives. Alternatives that would necessitate changes in staffing levels would represent an impact on operations. Existing staffing levels were inventoried, and assessments were made of current operations. Knowledge about proposed activities was used to anticipate the operational changes that would be needed under each action alternative. An assessment of the labor required to implement these actions was compared with existing operations, staffing, and funding.

Type of Impact: This analysis identifies potential impacts as either beneficial or adverse. Impacts are considered adverse if the implementation of an alternative would increase operating costs. Impacts are considered beneficial if the implementation of an alternative would decrease operating costs

Duration of Impact: The duration of an impact is the time required for park operations to return to current conditions after the implementation of an alternative. The analysis identifies impacts as either short-term or long-term. In general, short-term impacts would be temporary transitional effects associated with the implementation of an action (e.g., related to construction activities). In contrast, long-term impacts are generally those that would last ten years or more and have a permanent effect on park operations.

Intensity of Impact: The intensity of an impact on park operations is a measure of changes in costs required to continue existing operations. Negligible impacts would not result in a measurable difference in costs from existing levels. Minor impacts are those that would cause measurable additions or reductions in cost of less than 15% of existing levels. Moderate impacts would result in additions or reductions in cost of 15-30% of existing levels. Major impacts would result in additions or reductions exceeding 30% of existing levels.

Alternative 1: No Action

Analysis

The NPS would continue to restore scenic vistas at a rate of about three per decade. There would be no consistent process to prioritize vistas for management or determine the intensity of treatments. Obscured vistas and decreased viewing areas would make it more difficult for the Division of Interpretation and Education to interpret the park through signs and programs associated with vistas. The Division of Visitor and Resource Protection would also experience operational difficulties

associated with obscured vistas. By allowing trees and fuel loads to increase in areas with high Fire Return Intervals, a higher likelihood of wildland fire would result, which would increase the burden on fire management operations. Vista clearing activity would continue to be minimal; therefore, there would be a long-term negligible to minor adverse impact on park operations within the project area.

Cumulative Impacts

Past management decisions and actions that have affected park operations and facilities are many. Numerous decisions and actions have brought attention and prominence to Yosemite National Park, and have created a park that is world-famous with increased visitor use demands. These actions have had led to long-term moderate adverse impacts on park operations. Park operations and facilities have also been affected by past fire suppression activities. Fire suppression has caused long-term adverse impacts by contributing to increased fuel loads in the area forests that cause an increase in present action.

Present plans and actions that have affected park operations include: the *General Management Plan for Yosemite*; the *Fire Management Plan*; the *Invasive Plant Management Plan*; the Tioga Trailheads Project; and the Glacier Point, Valley Loop, and Tioga Road rehabilitations. While these plans and actions may increase the work load and responsibility for park divisions, they also provide critical guidance, analysis, and improved clarity for actions in the park that would cause increased problems in the future. Overall, present plans and actions have long-term moderate beneficial impacts.

Reasonably foreseeable planning efforts that may affect park operations include the Tuolumne and Merced River Wild and Scenic River comprehensive management plans. Reasonably foreseeable actions that may affect park operations include continued historic structures and landscape rehabilitation projects, continued road safety improvement projects, increased visitor use, and regional population growth. Increased population growth and subsequent visitor use may have negligibly adverse impacts. These actions will likely have long-term minor beneficial impacts by further directing and clarifying actions and impacts.

Overall, past, present, and reasonably foreseeable future actions have had long-term negligible adverse impacts on roads and transportation. When considered with cumulative impacts, this alternative would produce negligible impacts. Impacts on park operations would continue as long-term negligible adverse.

Alternative 2: Use Scenic Value to Determine Intensity of Vista Clearing

Analysis

Under Alternative 2, park staff would adapt and use the Visual Resource Assessment (see Appendix A) to assess the scenic value of each vista point and prioritize vistas for treatment. This alternative would require staff to be trained in using the Visual Resource Assessment tool, which may temporarily increase staffing demands. A few days of staff training would be required; such training could take place within the park. A standardized clearing prescription would be applied to vistas with low, medium, and high values. About 104 vistas would be considered for initial treatment.

This alternative would increase vista clearing and management actions. RM&S division staff would assess and write annual work plans to reestablish vista sites for the next several years at a minimum, as well as carry out cyclical maintenance needed for each vista site. The Division of Facilities Management park forester and a Visitor and Resource Protection Division fire manager would also need to review work plans, as well as provide oversight for work plan implementation. Adverse impacts on park operations as a result of Alternative 2 would likely be long-term negligible to minor.

Cumulative Impacts

Cumulative impacts would be the same as those described in Alternative 1. When considered with cumulative impacts, this alternative would produce negligible effects. Impacts on park operations would continue as long-term negligible adverse.

Alternative 3: Use Ecological Conditions to Determine Intensity of Vista Clearing (Preferred Alternative)

Analysis

Under Alternative 3, vistas would be prioritized for treatment using scenic value criteria (Visual Resource Assessment). This alternative would require staff to be trained in using the Visual Resource Assessment tool, which may temporarily increase staffing demands. A few days of staff training would be required; such training could take place within the park. Once sites were prioritized, the ecological conditions at each site would determine the prescription for vegetation clearing. This could reduce the time needed to create management prescriptions for each site by more clearly stating preferences and guidelines based on vegetation communities. Efficiencies between fire management operations and vista management operations may be increased by incorporating Ecological Conditions. Park staff would clear and maintain about 93 obscured or partially obscured vistas.

Park operations needs associated with vista management actions would be the same as those described in Alternative 2. Adverse impacts on park operations as a result of Alternative 4 would likely be long-term negligible to minor.

Cumulative Impacts

Cumulative impacts would be the same as those described in Alternative 1. When considered with cumulative impacts, this alternative would produce negligible impacts. Impacts on park operations would continue as long-term negligible adverse.

Alternative 4: Use Professional Team Assessment to Prioritize Vistas for Treatment

Analysis

Under Alternative 4, vista management actions would occur, with Professional Team Assessment used to prioritize vistas and Scenic Value used to determine management actions. The Professional Team Assessment approach to vista prioritization would increase staff demands for the RM&S. RM&S staff would be responsible for creating assessments and annual work plans. As the scenic value of each site would need to be assessed and justified individually instead of systematically, more time would probably be required to create work plans on an annual basis. Park staff would consider about 181 sites for initial management actions.

Park operations needs associated with vista management actions would be the same as those described in Alternative 2. Adverse impacts on park operations as a result of Alternative 4 would likely be long-term negligible to minor.

Cumulative Impacts

Cumulative impacts would be the same as those described in Alternative 1. When considered in terms of cumulative impacts, this alternative would produce negligible impacts. Impacts on park operations would continue as long-term negligible adverse impacts.

Alternative 5: Use Professional Team Assessment with Ecological Considerations to Determine Intensity of Vista Clearing

Analysis

Under Alternative 5, vista management actions would take place, with Professional Team Assessment used to prioritize vistas and Ecological Conditions used to determine management actions. Efficiencies between fire management operations and vista management operations may be increased by incorporating Ecological Conditions. Using Ecological Conditions could reduce the time needed to create management prescriptions for each site by more clearly indicating preferences and guidelines based on vegetation communities when compared with alternatives 4 and 2. The Professional Team Assessment approach to vista prioritization would increase staff demands for the RM&S because staff would be responsible for creating assessments and annual work plans. As the scenic value of each site would need to be assessed and justified individually instead of systematically, more time would probably be required to create work plans on an annual basis. Park staff would consider about 167 sites for initial management actions.

Park operations needs associated with vista management actions would be the same as those described in Alternative 2. Adverse impacts on park operations as a result of Alternative 5 would probably be long-term negligible to minor.

Cumulative Impacts

Cumulative impacts would be the same as those described in Alternative 1. When considered in terms of cumulative impacts, this alternative would produce negligible impacts. Impacts on park operations would continue as long-term negligible adverse impacts.

IV WILD AND SCENIC RIVER ACT COMPLIANCE

Introduction

In the 1960s, the United States came to recognize that the nation's rivers were being dredged, dammed, diverted, and degraded at a rapid rate. In response, in October 1968, the U.S. Congress established the Wild and Scenic Rivers Act (WSRA) to protect and enhance rivers that possess distinctively unique or "outstandingly remarkable values" (ORVs) that set them apart from all other rivers. Wild and scenic rivers are designated to protect their free-flowing condition and to protect and enhance their unique values for the benefit and enjoyment of present and future generations (16 U.S.C. 1271 et seq.).

There are two wild and scenic rivers that flow through Yosemite National Park.

- In 1987, Congress placed 122 miles of the Merced River (81 of which are within the park). The National Park Service (NPS) manages the main stem and the South Fork of the Merced within Yosemite National Park, and sections within the El Portal Administrative Site.
- In 1984, Congress designated 83 miles of the Tuolumne River as wild and scenic, 54 of which are managed by the NPS within Yosemite National Park. This area includes the headwaters of the Dana and Lyell Fork to the east end of the Hetch Hetchy reservoir, and the west end of the reservoir to the western boundary of the park.

The Scenic Vista Management Plan (SVMP) will be implemented within the Merced and Tuolumne river corridors.

The Wild and Scenic Rivers Act requires managing agencies to prepare a comprehensive management plan for the river and its immediate environment. The NPS has initiated comprehensive planning processes for future management of the Tuolumne and Merced Wild and Scenic Rivers. This chapter evaluates the consistency of the proposed action with the Act, and with the 1982 *Wild and Scenic Rivers Guidelines* (Secretarial Guidelines).

Relationship of the Scenic Vista Management Plan to River Boundaries

In the designating language for the Merced River, the Wild and Scenic Rivers Act signals the intent of Congress to protect a minimum of 0.25 mile from both riverbanks until a comprehensive management plan formally defines the boundaries. Actions proposed in the SVMP would occur within both wild and scenic river corridors in Yosemite: The main stem and the South Fork of the Merced Wild and Scenic River, and the Dana and Lyell Forks and the main stem of the Tuolumne Wild and Scenic River.

Methodology

Actions proposed in the *Scenic Vista Management Plan* (SVMP) alternatives that would occur within wild, scenic, and recreational river segments will be analyzed with regard to their: (1) compatibility with

classifications; (2) impacts on draft ORVs; and (3) compatibility with the Wild and Scenic Rivers Act Section 7 determination process. This analysis compares the preferred alternative (Use Ecological Conditions to Determine Intensity of Vista Clearing) with the No Action Alternative (see Chapter 2, Alternatives). The focus of the analysis is on long-term effects (e.g., effects that would last ten years or more or would be permanent). Short-term effects are not addressed in this analysis unless they have a substantial, highly noticeable influence that warrants consideration.

Classification Consistency

Implementation of proposed actions in the SVMP would not result in any additional impoundments, shoreline development, or changes in road access. Therefore, the proposed action is compatible with the existing classifications.

Outstandingly Remarkable Values

Outstandingly remarkable values are the river-related/river-dependent rare, unique, or exemplary values that make a river worthy of special protection. These values can include, but are not limited to, scenery, recreation, fish and wildlife, geology, history, culture, and other similar values. Section 10(a) of the Wild and Scenic Rivers Act requires that river managers protect and enhance them.

The outstandingly remarkable values for the Tuolumne and Merced rivers were presented in early versions of draft ORV reports. Draft reports and planning updates are available on the Yosemite National Park website at http://www.nps.gov/yose/parkmgmt/project-status.htm. Identification of ORVs for the wild and scenic river corridors has been and will continue to be informed and refined to incorporate current data and expertise. The "Merced Wild and Scenic River Comprehensive Management Plan, Draft Environmental Impact Statement" (DEIS) and the "Tuolumne Wild and Scenic River Comprehensive Management Plan" (DEIS) will present draft ORVs for the Merced and Tuolumne river corridors. A final ORV report for each river plan will incorporate comments received during public scoping and review of the DEIS, and will become the foundation of the final EIS for the Tuolumne and Merced wild and scenic river corridors.

Outstandingly Remarkable Values Analysis

This Wild and Scenic Rivers Act analysis has been generated because actions proposed in the SVMP cross over into segments of the river corridor. Although the ORVs have not been finalized and will not be resolved until the Record of Decision (ROD) is signed, the SVMP has built-in flexibility to adapt and implement actions called for in future comprehensive river plans. The NPS is continuing to manage the corridors as an aspect of carrying out the agency's mission.

The SVMP will not degrade or predetermine the selection of the ORVs. Implementation of the proposed action would be consistent with management strategies identified in the Tuolumne and Merced river plans for an upward trend of protecting and enhancing ecosystems, as well as segment-wide natural and sociocultural values.

Currently, the NPS uses the management elements of the 1980 *General Management Plan,* the *Wilderness Management Plan,* the *Invasive Plant Management Plan,* the *Yosemite Fire Management Plan,* the National Environmental Policy Act (NEPA), and WSRA (and other laws, regulations, and policies) as decision-making criteria with which to evaluate localized vista management projects in the river corridors. Although a number of vista management treatments are proposed in the SVMP, none has the potential for adverse segment-wide effects in river corridors.

The plan does not propose the clearing of vistas in river segments that flow through designated wilderness, to avoid conflicts with wilderness character and management. In localized areas within river

segments, the SVMP Preferred Alternative would protect and enhance scenic values through actions that would restore and maintain open vistas and natural forest structure.

If proposed actions related to the SVMP require further analysis (in compliance with NEPA), the NPS will complete a sufficient assessment and analysis prior to taking action. Should future actions related to the SVMP require compliance with NEPA, the NPS will complete such analyses to ensure the protection and enhancement of river values established in final river plans.

Maintaining the present strategy not only is suitable, but also better protects ORVs than if the park were to revert to taking no action for areas within river corridors. The current management strategy works well until comprehensive management plans for the Tuolumne and Merced wild and scenic rivers are completed that could make provisions for change necessary to further protect and enhance ORVs.

User Capacity

The proposed action is not expected to result in any change in the types or levels of visitor use within the Merced and Tuolumne wild and scenic river boundaries; nor would it significantly change existing vehicular or pedestrian circulation patterns.

Wild and Scenic Rivers Act Section 7 Determination Process

Section 7 of the Wild and Scenic Rivers Act requires river managing agencies to determine whether water resources projects that occur in the bed and on the banks of the river or upstream tributaries would adversely affect free flow, or directly and adversely impact ORVs for which the river was designated. A water resources project is any dam, water conduit, powerhouse, transmission line, or other works project under the Federal Power Act, or other developments, that would affect the free-flowing character of a wild and scenic river. It also includes activities that require a Section 404 permit from the U.S. Army Corps of Engineers (IWSRCC 1999).

The SVMP does not fit the definition of a water resources project and therefore does not trigger the Section 7 determination process. To ensure that ensuing vista management actions continue to meet this assessment, project managers and the Environmental Planning and Compliance Office will evaluate future work plans to ensure that they are consistent with the provision in Section 7 of the WSRA, and do not interfere substantially with public use and enjoyment of these values (16 USC 1281[a]). The evaluation includes an assessment of ORVs outside the wild and scenic river corridor boundaries, to identify and protect such values.

V CONSULTATION AND COORDINATION

Scoping History

The public scoping period for the *Scenic Vista Management Plan* Environmental Assessment (EA) began on February 12, 2009 and continued through March 20, 2009. The park mailed out 135 notices to people or organizations who have expressed interest in park operations or who have worked on scenic vista planning elsewhere. The scoping announcement was included in the *Yosemite National Park Electronic Newsletter*, which has approximately 7000 subscribers. A press release was issued on January 23, 2009 and printed in the *Mariposa Gazette* on January 26, 2009. A fact sheet was made available at the Yosemite Valley Visitor Center and on the park's webpage during the scoping period. The plan was presented at Open Houses in the park, and at the Valley Visitor Center on January 28, 2009 and February 25, 2009. Information has been available at this venue throughout public scoping and the development of the EA. Plan representatives attended Open Houses at the Tuolumne Meadows Visitor Center on July 18, 2009 and August 22, 2009. Open Houses with field walks in Yosemite Valley were attended by project managers and representatives on June 24 and July 29, 2009.

Written scoping comments were received at the public scoping meetings, and by fax, email, and online through the Planning, Environment, and Public Comment (PEPC) website (http://parkplanning.nps.gov). *The Scenic Vista Management Plan Public Scoping Report* is available for review on PEPC and on the park website (http://www.nps.gov/yose/parkmgmt/vista.htm).

Internal scoping took place concurrent with public scoping. Representatives from all park divisions attended a series of core team meetings to identify issues and participate in the development of the plan. Public comments received during scoping have helped shape the alternatives presented. After scoping was completed, two internal workshops were held to develop action alternatives. A Choosing by Advantages (CBA) workshop was held on October 21, 2009 to select a preferred alternative. The release of this EA provides the first chance for the public to see and respond to the range of alternatives.

Comments received throughout the public review period will be given full consideration in the park's decision-making process.

American Indian Consultation

Yosemite National Park works with seven tribes and tribal groups that have connections to Yosemite. The park initiated tribal scoping on July 22, 2008 at the All-Tribes meeting in Wawona. Contact with tribal groups has occurred intermittently throughout the plan and is regarded as a government-to-government relationship.

A letter and the fact sheet were sent to each of the seven tribes in January 2009. The vista management project manager presented an announcement of the planning process to the Tuolumne Band of Mi-Wuk on February 4, 2009. The park's historic preservation officer and American Indian liaison presented the same announcement to the North Fork Rancheria of Mono Indians on February 12, 2009.

On April 2, the project manager met with the Mariposa tribal council, and on June 10, the project manager and the historic preservation officer and American Indian liaison met with representatives of the North Fork Mono Rancheria in the Wawona area.

Several common themes emerged during tribal scoping. These themes are listed below.

- Fire management is very important.
- The park needs to have more prescribed fires, especially as a way of preserving California black oak habitat.
- California black oak trees are very important, and they seem to be in decline.
- Clearing the understory from under California black oaks is essential for the health of the trees.
- Yosemite Valley was once much more open than it is now.
- The park needs to make a greater effort to preserve existing black oaks and to encourage regeneration of oak woodlands.
- Conifer growth has reduced the number of meadows in the Valley and generally blocked many views.

The tribes and tribal groups have been provided with a copy of this EA for review and will continue to be consulted during the annual work plan review, if approved.

Issues and Concerns Addressed in Document

All but three of the issues and concerns brought up during public scoping are addressed in this document. Issues not addressed are listed in the following section.

Issues and Concerns Out of Scope

The issue regarding renaming Tunnel View "Valley Overlook" is outside the scope of this document. The *Scenic Vista Management Plan* EA considers the condition and management of vistas, but does not address naming conventions.

Restoring the El Capitan Moraine would likely have an impact on Scenic Resources, but represents a landscape scale action, rather than the view as seen from a specific vista point. Landscape scale actions are outside the scope of the SVMP. The plan focuses on the vegetation blocking scenic viewing areas, not on the condition of the area being seen.

This plan focuses on the concept that American Indians burned Yosemite Valley and other areas nearly every year, the effects of those fires, and the visual impacts of discontinuing the fires. In that context, the details regarding which tribe or group conducted the burning are less critical. This plan does not address specifics concerning which tribal groups were present at particular times or places, or details of their practices. Park management has announced the intent to review the history of American Indians in the park to ensure that the park is presenting correct information.

Agency Consultation

California State Historic Preservation Officer/ Advisory Council on Historic Preservation

The *1999 Park Programmatic Agreement Among The National Park Service At Yosemite, The California State Historic Preservation Officer and The Advisory Council On Historic Preservation Regarding Planning, Design, Construction, Operations And Maintenance, Yosemite National Park, California. With*

October, 2003 Amendment 1 (1999 PA) (NPS 2003b) was developed among NPS staff at Yosemite, the California State historic preservation officer, and the Advisory Council on Historic Preservation, in consultation with American Indian tribes and the public. The agreement stipulates methods by which the Park may carry out its responsibilities under Section 106 of the NHPA.

For the purpose of NEPA and NPS policy, an effect on a historic property that is eligible to be or is listed in the *National Register of Historic Places* would be considered significant if an adverse affect could not be resolved in agreement with the state historic preservation officer (SHPO), Advisory Council on Historic Preservation (ACHP), American Indian tribal governments, or other consulting and interested parties and the public. Consultation with the SHPO is required to resolve adverse effects by implementation of standard mitigation measures, pursuant to Stipulation VIII of the 1999 PA.

Central Valley Regional Water Quality Control Board

The State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) are the regulatory boards within California's Environmental Protection Agency that derive their authority from Section 401 of the Clean Water Act. The SWRCB allocates rights to the use of surface water and, along with the RWQCBs, is charged with protecting surface, ground, and coastal waters throughout the state. The RWQCBs issue permits that govern and restrict the amount of pollutants that can be discharged into the ground or surface water, which includes regulating stormwater during construction activities. Yosemite National Park is under the jurisdiction of Regional Board (5), Central Valley, and therefore consults with and obtains any necessary permits and/or certifications for construction activities from the Central Valley RWQCB.

U.S. Army Corps of Engineers

This EA has determined that none of the alternatives would adversely affect waters of the United States or special aquatic sites in a manner that would require a permit from the U.S. Army Corps of Engineers (USCOE). The NPS has notified the USCOE of this finding and has requested that the agency review these findings and return a letter concurring with this determination.

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 (USFWS) to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of listed species or adversely modify critical habitat. The NPS requested a list of federally listed endangered and threatened species that may be present, and then had it updated on March 1, 2010. The NPS reviewed these lists to determine whether these species were known to live in the park, and the lists were used as a basis for the special-status analysis in this EA. None of the alternatives would adversely affect species that are federally listed as threatened or endangered. The USFWS was sent a copy of the EA for review.

Publication and Distribution

Copies of the *Scenic Vista Management Plan for Yosemite National Park* EA are being distributed to interested parties, as well as to congressional delegations, state and local elected officials, federal agencies, federally recognized tribes, organizations and local businesses, public libraries, and the news media. This document can be reviewed online at www.nps.gov/yose/planning. Requests for copies of this EA should be directed to:

Mail: Superintendent, Yosemite National Park
ATTN.: Scenic Vista Management Plan
P.O. Box 577
Yosemite, California 95389

Phone: 209-379-1365
Fax: 209-379-1294
E-mail: Yose_Planning@nps.gov

Copies may also be obtained by calling or writing the contact listed above.

List of Agencies and Organizations Receiving This Document

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American Hiking Society
Baker Manock & Jensen
Bioscience & Natural Resources Library, UC-Berkeley
Bureau of Land Management
Calabasas Historical Society
California Regional Water Quality Control Board
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California Department of Fish & Game
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California Highway Patrol
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Central Sierra Environmental Resource Center
Civic Center Library
Clarke Broadcasting
Congressman Mark Souder
County Line Riders of Catalina, Inc.
Delaware North Corporation
Diamond Coach Tours
EDN Magazine
El Camino Lines
El Portal Town Planning Advisory Committee
Federal Highway Administration
Friends of the River/American Rivers
Friends of Yosemite Valley
George Radanovich, Representative
Government Information Shields Library
Groveland Community Services District
Groveland Ranger District
Hayward Area Recreation and Park District
House Subcommittee on National Parks & Public Lands
Inyo National Forest
KGO Radio
Lake McClure/Lake McSwain
Library E350
Madera County Board of Supervisors
Mammoth Mountain Ski Area
Marine Mammal Center
Mariposa County Environmental Health Department
Mariposa County Board of Supervisors
Mariposa County Chamber of Commerce
Mariposa County Department of Public Works
Mariposa County Fire Department
Mariposa County Planning Department
Mariposa County Visitors Bureau
Mariposa Public Utility District
Mariposans for Environmentally Responsible Growth
Mary Buren Elementary School
Maryland-National Capital Park and Planning Committee
Merced County Association of Governments
Mono Basin National Forest Scenic Area
Mono County Board of Supervisors
National Park Service
National Park Service - Air Resources Division
National Park Service - Blue Ridge Parkway
National Park Service, Delaware Water Gap NRA
National Park Service, Denver Service Center - Technical Information Center
National Park Service - Grant-Kohrs NHS
National Park Service - Great Smoky Mountains National Park
National Park Service - Lewis and Clark NHT
National Park Service - Mississippi National River & Recreation Area
National Park Service - Pacific West Region
National Park Service - Rocky Mountain National Park
National Park Service - Sequoia & Kings Canyon National Parks
National Park Service - Water Resources Division
National Parks Conservation Association
Natural Resources Defense Council

New York City Department of Planning
New York State Office of Parks
North Carolina State University, Department of Parks, Recreation and Tourism Management
North Cascades National Park
Oakhurst Public Library
Office of Assemblyman Dave Cogdill
Pacific-Ultrapower Chinese Station
Parsons Brinckerhoff
Polar Equipment, Inc.
Reed Construction Data
Restore Hetch Hetchy
Sacramento County Public Library
Salazar Library, Sonoma State University
San Francisco Chronicle
San Francisco City Public Library
San Francisco Planning Department
San Francisco Public Utilities Commission
San Francisco Public Utilities Commission/Hetch Hetchy Water & Power
San Joaquin Valley Air Pollution Control District
Saving Yosemite
SEIU Local 535
Senate Subcommittee on Interior Appropriations
Senator Barbara Boxer
Senator Dianne Feinstein
Seventh-day Adventist Church, Central California
SFPUC Communications
Sherburne-Earlville Schools
Sierra Club
Sierra Club, Tehipite Chapter
Sierra Club, Yosemite Committee
Sierra National Forest
Sonoma County Library
Soroptimist International of Groveland
Stanford University Green Library
Stanislaus Council of Government
Stanislaus National Forest
State of California Governor's Office
Tall Timbers Research Station
The Access Fund
Transportation Techniques
Tuolumne County Air Pollution Control District
Tuolumne County Board of Supervisors
Tuolumne County Visitors Bureau
UCLA Maps & Government Information Library
Ultrasystems Environmental
United States Attorney's Office
University of Library Tech Services
University of Minnesota - Forestry Library
U.S. Army Corps of Engineers
U.S. EPA Region IX
U.S. Fish & Wildlife Service
U.S. Forest Service Sierra National Forest
U.S. Department of the Interior, Office of Environmental Policy & Compliance
U.S. Department of the Interior, Regional Solicitor
U.S. Geological Survey, Water Resources Division, Western Region
Virginia Lakes Pack Outfit
Wawona Area Property Owners Association
Wawona Town Plan Advisory Committee

List of Preparers and Reviewers

Table V-1: List of preparers and reviewers

Name	Title	Education	Service
National Park Service, Yosemite National Park			
Don Neubacher	Superintendent	M.S. Natural Resource Management B.S. Planning and Management	28 NPS
Dave Uberuaga	Acting Superintendent (January 2009-February 2010)	M.B.A. B.S. Biology	26 NPS 10 other
Michael J. Tollefson	Superintendent (Retired)	B.A. Business Administration (Marketing and Finance)	32 NPS
Niki Stephanie Nicholas	Division Chief, Resources Management and Science	Ph.D. Forestry M.S. Ecology B.A. Biology	6 NPS 18 other
Mark Butler	Division Chief Project Management	M.P.A. Public Administration B.S. Soils and Water Science	28 NPS 2 other
Kathleen S. Morse	Division Chief, Planning	Graduate work B.S. Natural Resource Economics	20 USFS
Elexis Mayer	Environmental Planning and Compliance Program Manager	B.S. Natural Resources Planning	7 NPS 2 other
Lead Writers and Preparers			
Tim Croissant	Supervisory Interdisciplinary Natural Resource Specialist, Vista Project Manager (former)	B.S. Wildlife Biology and Botany	10 NPS 2 other
Kevin McCardle	Historical Landscape Architect, Vista Project Manager	M.L.A. B.S. Microbiology B.S. Science Education	1 NPS 11 other
Joy Fischer	Interdisciplinary Physical Scientist, Vista Project Manager	B.S. Environmental Science	7 NPS 1 other
Project Staff			
Brian Chilcott	Historical Landscape Architect	M.L.A. B.S. Biology	1 NPS 2 other
Katrin Gartenlohner	Historical Landscape Intern	Undergraduate Student, Landscape Architecture	6 months other
Amy Hoke	Historical Landscape Architect	M.L.A. Landscape Architecture B.A. English	5 NPS 5 other
Helli Tucker	Biological Science Technician	B.S. Physical Geography	5 NPS
Brittany Woiderski	Physical Science Technician	B.S. Geography	1 NPS 2 Other
Roger Putnam	Biological Science Technician	B.S. Geology	3 NPS 1 other
Yosemite National Park Authors and Technical Experts			
Dave Humphrey	Branch Chief, History, Architecture and Landscapes	B.S. Landscape Architecture	24 NPS 8 other
Judi Weaser	Branch Chief, Vegetation and Ecological Restoration	M.S. Community Development B.S. Zoology	4 NPS 16 Public
Kristina Rylands	River Management Planning Specialist	Graduate work, Education B.A. English and Natural History	8 NPS 14 other
Sue Clark	Environmental Compliance Specialist	B.S. Plant and Soil Science Ongoing graduate work, Environmental Planning	28 NPS 6 other
Brian Mattos	Park Forester	B.S. Forest Resources Management	26 NPS 2 other

Table V-1: List of preparers and reviewers

Name	Title	Education	Service
Annette Catamec	Concessions Management Specialist	B.S, Park Administration, Resources Recreation and Visitor Management	28 NPS
Charles Cuvelier	Deputy Chief Ranger, Operations	B.S. Biology and Outdoor Recreation	17 NPS
Gretchen Stromberg	Landscape Architect, Planner, Project Manager	M.L.A. B.A. Anthropology	7 NPS 6 other
Bob Roney	Master Interpreter	4 years undergraduate	42 NPS
Henrietta Degroot	Community Planner	M.A. Public Policy B.A. Political Science	14 NPS 9 other
Marti Gerdes	Historical Landscape Architect (Former)	M.S. Historic Preservation M.S. Journalism	3 NPS 1 other
Jennifer Hardin	Cultural Anthropologist	Ph.D. candidate M.A. Applied Cultural Anthropology M.A. Cultural Anthropology B.S. Cultural Anthropology	6 m NPS 13 other
Danny Schaible	Historical Landscape Architect	B.L.A.	4 NPS
Jeanette Simons	Historic Preservation Officer/ Native American Liason, Section 106 Consultation	M.A. Anthropology, emphasis in archeology B.A. Anthropology	11 Public 12 other
Calvin Liu	Public Outreach Specialist	BA Outdoor Recreation	23 NPS
Lisa Acree	Park Botanist, Botany Program Manager	B.A. Environmental Studies	19 NPS
Jennifer Erxleben	Hydrologist	M.S. Watershed Science B.S. Geology	2 NPS 5 other
Joe Meyer	Branch Chief, Physical Science and Landscape Ecology	B.S. Biology	18 NPS 3 other
Lee Tarnay	Physical Scientist/Air Resource Specialist	B.S. Environmental Science and Health Ph.D. Environmental Science and Health	6 NPS
Sarah Stock	Wildlife Biologist	M.S. Zoology B.S. Ecology	4 NPS 11 other
Jun Kinoshita	Fire Archeologist	M.A. Archeology B.A. Anthropology	9 NPS 3 other
Steve Thompson	Branch Chief, Wildlife Management	M.S. Ecology – Wildlife B.S. Biology	21 NPS 5 Other
Sue Beatty	Restoration Ecologist	Graduate work, 2 years (Resources Management) B.S. Outdoor Recreation	26 NPS
Laura Kirn	Branch Chief, Anthropology and Archeology	Ongoing graduate work, 2 years B.S. Anthropology	22 NPS
Bret Meldrum	Branch Chief, Visitor Use and Social Science	M.S. Resource Recreation and Tourism B.S. Recreation, Parks and Tourism Resources	
Dave Pettebone	Social Scientist, Visitor Use and Social Science	Ph.D. Human Dimensions of Natural Resources M.S. Human Dimensions of Natural Resources B.A. Jazz Studies	13 NPS
Greg Stock	Park Geologist	Ph.D. Earth Science B.S. Geology	5 NPS 7 other
Mark Fincher	Wilderness Specialist	B.A. Geography and Environmental Studies	19 NPS

VI GLOSSARY

Access (vista management & VRA component): This component of the VRA measures the ease of visitor access to the vista point. In the VRA, access is measured in *ease of access* and *infrastructure present*. The easier a vista is to see, the more visitors are likely to see it. This is measured in *ease of access* and *infrastructure present. Ease of access* refers to how strenuous an effort is required to see the vista. Points close to or at parking areas are considered more accessible than points requiring a strenuous walk to access. *Infrastructure present* generally notes paved areas and other improvements that can give the visitor a fuller experience with less effort.

Ad hoc: For the particular end or case at hand, without consideration of wider applications. For example, scenic vistas have historically been being managed in park using an ad hoc approach.

Affected environment: Existing biological, physical, cultural, social, and economic conditions that are subject to both direct and indirect changes as a result of actions described within alternatives under consideration.

Alluvial: Process by which sediment is deposited by running water.

Alpine (zone): This zone is highest in elevation of all vegetation zones, and occurs in the park above about 2,900 m (9,500 ft.). It is easily distinguished by its lack of forests; additionally, its herbaceous plants tend to be low in stature due to the harsh environment.

Alternatives: A reasonable range of options that can accomplish an agency's objectives.

American Indian: A member of the indigenous people of the United States of America.

Annual Work Plan: Under the programmatic approach for the Scenic Vista Management Plan, this is a plan that would be developed every year, detailing vista points scheduled for treatment. The plan would include the location of the vista points, the number, size, and species of trees to be removed, and other relevant information (see Implementation Project).

Anthropogenic: Caused by, or produced by, humans.

Background (vista management): The distant part of a view, when considering the depth of a scenic vista. The background of a scenic vista is located over a kilometer away from the viewing area (see Depth, Foreground, and Middle Ground).

Barren: Areas classified as barren include urban/developed, rock, and sparsely vegetated areas.

Beneficial (impact): An action that would result in improvement to the resource being discussed.

Best Management Practices: Effective, feasible conservation practices and land-and water-management measures that avoid or minimize adverse impacts to natural and cultural resources.

Biomass:

1. Wood products that may or may not be used commercially.
2. The total weight of all living organisms in a biological community.

Bog: A poorly drained area that is usually acid-rich area in accumulated plant material, frequently surrounding a body of open water, and having a characteristic flora, usually comprised of sedges, heaths, and sphagnum (see Wetland).

Boreal: Of or pertaining to the north, specifically mountains or forests.

Chaparral: An ecological community often occurring on exposed, south, or southwest facing slopes in the park. It occurs at low elevations between 500-1,500 m (1,600 ft. – 5,000 ft.), and at mid-elevations between 1,200 and 3,300 m (4,000 ft. – 10,000 ft.). This vegetation community is composed of dense, thick-leaved thickets of shrubby plants adapted to dry summers, and frequently recurring fires.

Chip: Small pieces of wood by-product that are generated during vista clearing actions and could be used for mulch (see Mulch).

Civilian Conservation Corps (CCC): Established in 1933 by President Roosevelt to provide needed jobs and accomplish work in America's federal and state forests and parks. Yosemite's CCC camps began quickly and were in place by June 1933. Some of the projects in which enrollees participated included forest cleanup and improvement, roadside clearing, construction of horse trails, creek and river erosion control, sloping and planting of cut banks and road fills, insect control, fire protection, and other forestry work such as revegetation.

Climate: The average course or condition of the weather at a place usually over a period of years as exhibited by temperature, wind velocity, and precipitation.

Climate Change: Any significant change in global climate lasting for an extended period.

CMP Feature (VRA component): A scenic feature identified in a Comprehensive Management Plan (CMP). For example, the 1980 *General Management Plan* (GMP) noted park features that have been closely identified with Yosemite National Park as important icons or scenic features. At this time, the *General Management Plan* is the only CMP in Yosemite. As other CMPs are finalized, any additional scenic resources will also be considered (see Feature, General Management Plan, Scenic Icon, Scenic Resource, Visual Resource Assessment, and Uniqueness).

Colluvial: Referring to colluvium: loose earth material that has accumulated at the base of a hill, through the action of gravity, as piles of talus, avalanche debris, and sheets of detritus moved by soil creep or frost action.

Community (vegetation): Any grouping of populations of different plants that live together in a particular environment (see Vegetation Type and Vegetation Zone).

Coniferous: Any order of mostly evergreen trees and shrubs having usually needle-shaped or scale-like leaves and including forms (as pines) with true cones and others (as yews) with arillate fruit.

Context: Setting or area within which impacts are analyzed – such as the local project area, the region, or national area of influence; for cultural resources – the area of potential effect.

Cultural Landscape: Distinct geographical areas or properties uniquely representing the combined work of nature and of man (World Heritage Committee). Cultural landscapes are the result of the long interaction between humans and the land. They reflect human adaptation and use of natural resources, and the influence of beliefs, values, traditions, and actions over time upon the natural landscape. They are shaped over time by historical land use and management practices, as well as by politics and property laws, levels of technology, and economic conditions. Cultural landscapes provide a living record of an area's past and act as a visual chronicle of its history. They are associated with a historical event, activity, or person, or exhibit other cultural or aesthetic values.

Cultural Resources: The broad category of sociocultural resources and historic properties that reflects the relationship of people with their environment. It is an aspect of a cultural system that is valued by or significantly representative of a culture, or that contains significant information about a culture. A

cultural resource may be a tangible entity or a cultural practice. Under NEPA, these include culturally valued pieces of real property (not historic properties) and nontangible values such as cultural use of the biophysical and built environments, and socio-cultural attributes such as social cohesion, lifeways, religious practice, and other social institutions (40 CFR 1508.27 (b)(3)).

Cultural Value: A measure of how important a particular vista is to a Yosemite National Park visitor's experience.

Cumulative Impacts: Effects on the environment that would result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions. Impacts are considered cumulative regardless of what agency or group (federal or nonfederal) undertakes the action.

Dbh (diameter at breast height): The diameter of a tree, regarding which a surveyor takes a measurement at the surveyor's breast height. The measurement is usually expressed in inches.

Depth (VRA component): A measure of how layered a distant vista is. A vista with depth is composed of topographic relief and spatially distinct layers (far enough apart) that appear to fall away from foreground to background. For example, forbs in a meadow are distinct from trees in a forest, which, in turn, are distinct from a granite cliff face. Distance can also produce layers, as mountain ridge lines can stand out as being distinct from other ridge lines. (This is a component of Vividness in the VRA; see Visual Resource Assessment, and Vividness. See also Foreground, Middleground, and Background.)

Design Year: The year in which a vista point was established. The design year is used by resource managers as a mitigation measure to limit the age by which a tree can be cut. Trees would not be removed if they were established before the vista point they are located at was established. Generally, this means that no tree that grew prior to 1880 (roughly when tourism began to have an impact on Yosemite) would be removed. In cases where no specific date is known, the vista point would be assumed to date from the initial construction of the road or trail on which it is located.

Duration: Duration is a measure of the period over which the effects of impacts persist. Duration as analyzed in the EA is described as either long-term or short-term.

Endangered Species: Plant and animal species that are in danger of extinction throughout all or a significant portion of their range. Endangered species are identified by the Secretary of the Interior in accordance with the Endangered Species Act of 1973.

Ecological Conditions: In the *Scenic Vista Management Plan*, the incorporation of ecological conditions is an approach that refers to the comprehensive examination of vegetation communities and their respective ecotones, or vegetation elevation zones, within the park. Vegetation zones include foothill woodland, lower montane forest and meadow, upper montane forest and meadow, subalpine forest and meadow, and alpine. Biological factors of this examination include the composition, structure, function, and distribution of vegetation communities, including the specific habitat requirements of wildlife species that occupy respective zones. Physical factors include the climate, geology, and hydrology associated with respective vegetation zones. A special emphasis is also given to vegetation, insect, and wildlife community interactions across the landscape (see Vegetation Zone and Vegetation Type).

Ecosystem: An arrangement of living and nonliving things and the forces that move them. Living things include plants and animals. Nonliving parts of ecosystems include rocks and minerals. Weather and wildland fire are two of the forces that act within ecosystems.

Endemic: An organism that evolved in and is restricted to, or exclusively known to, a particular locality. In this assessment, this term refers to plant or animal species unique to Yosemite.

Environmental Assessment (EA): A brief NEPA document that is prepared to (a) help determine whether the impact of a proposal or alternatives could be significant; (b) aid NPS in compliance with NEPA by evaluating a proposal that will have no significant impacts, but that may have measurable adverse impacts; or (c) evaluate a proposal that either is not described on the list of categorically excluded actions, or is on the list but exceptional circumstances (section 3.5) apply.

Environmental Justice: The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (as defined by the EPA). Executive Order 12898 requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high and adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. This Executive Order does not apply to the subject of this Environmental Assessment.

Establishment Date: See Design Year.

Ephemeral Image (VRA component): An uncommon event or dramatic change in a vista that contributes to its scenic quality. An ephemeral image can be associated with seasons, such as spring displays, fall tree colors, and waterfalls. It also refers to a presence and quality of views of sky, such as clouds, sunrise, or sunset. Life in a scene also constitutes an ephemeral image, such as wildlife presence and behavior. (This is a component of Vividness in the VRA; see also Vividness.)

Exotic Species: An introduced, nonnative species, or a species that is the result of direct or indirect, deliberate or accidental, introduction of the species by humans, and for which introduction permitted it to cross a natural barrier to dispersal (see Native Plant).

Expansiveness (VRA component): Generally defined as a sense of a wide and comprehensive landscape. For example, the view from Glacier Point is expansive, but the view from the lower Yosemite Falls footbridge is narrow and confined. Specifically defined in the VRA as the degree by which a vista is open and unconfined laterally, or side-to-side. (This is a component of Vividness in the VRA; see also Visual Resource Assessment and Vividness.)

Fauna: The animal life of a region or geological period.

Feathering (vista management): A vista clearing technique that leaves surroundings appearing natural and not manicured. This is done by making the clearing/surrounding vegetation edge transition look gradual and random to the extent possible. Feathering guidelines recommend that the horizontal edge of the clearing should be naturalistic, undulating, and not straight. The vertical transition should not be a consistent angle from the ground to the canopy, and should contain an occasional larger tree or gap.

Feature: A visually distinct or outstanding part, quality, or characteristic of a landscape (see CMP Feature).

Federally Listed (plants): see Endangered Species and Threatened Species.

Fen: A type of wetland that is defined as a low land covered wholly or partly with water unless artificially drained, that usually has peaty alkaline soil and characteristic flora, such as sedges and reeds (see Wetland).

Finding of No Significant Impact (FONSI): This public document describes the decision made on selecting the Preferred Alternative in an Environmental Assessment. It is also prepared to briefly present the reasons that an action, not otherwise excluded, will not have a significant effect on the human environment and for which, therefore, an EIS will not be prepared (40 CFR 1508.13) (see Environmental Assessment and Preferred Alternative).

Fire Management Plan: A strategic plan that defines a program to manage wildland fires based on an area's approved Land Management Plan. Fire Management Plans must address a full range of fire

management activities that support ecosystem sustainability, values to be protected, protection of firefighters and public safety, public health, and environmental issues, and must be consistent with resource management objectives and activities of the area.

Fire Regime: The combination of fire frequency, predictability, intensity, seasonality, and extent characteristic of fire in an ecosystem.

Fire Return Interval: The typical (average mean) period between naturally occurring fires. Fire return intervals vary by vegetation type and location.

Fire Return Interval Departure (FRiD): The number of missed fire cycles due to fire suppression.

Flora: Plant or bacterial life forms of a region or geological period.

Focal point (VRA component): A point within a vista that immediately draws the eyes and captures a viewer's interest. For example, focal points can be named mountains, or other prominent natural features, or a historic building, or a colorful object. (This is a component of Vividness in the VRA; see also Visual Resource Assessment and Vividness.)

Foothill Woodland (zone): This zone occurs below 600 m (about 2,000 ft.) along the western edge of the park, and consists of three primary vegetation types – foothill chaparral, blue oak, and foothill pine/live oak/chaparral. It is characterized by a Mediterranean climate, in which winters are cool and wet, and summers are hot and dry.

Foreground (VRA component): The immediate, up-close portion of a view, when considering the depth of a scenic vista. The foreground is located within the first 60 m (197 ft.) of the viewer and viewing area (see Depth, Foreground, Middle Ground, and Viewing Area).

Framing (vista management): A defined view boundary in which trees and landforms create frames (edges or sides) on either side of the vista focal point. In other words, this term describes the way trees and/or landforms *frame* vistas to make them clearer and more distinct. (This is a component of Vividness in the VRA; see also Visual Resource Assessment, Vividness, and Focal Point.)

Fuel Load: The amount of combustible material (dead plants and trees, litter, and duff) that is found in an area.

Fuels Treatment: The treatment of fuels that, left untreated, would otherwise interfere with effective fire management or control. For example, prescribed fire can reduce the amount of fuels that accumulate on the forest floor (see Prescribed Fire and Fire Management Plan).

General Management Plan (GMP): This plan was released by Yosemite National Park in 1980; it identified park features as important icons or scenic features. Scenic Icons identified are closely associated with Yosemite Valley, while Scenic Resources identified are valued features that can be seen from areas parkwide. In Yosemite Valley, the plan classified areas into varying scenic degrees, and identified the Valley's 11 most important Scenic Icons (see Icon View, Scenic Classification, and Scenic Resource).

Geographic (VRA component): Refers to proximity to other vista points (in their current condition (not currently blocked or obscured by vegetation) with similar views and visitor context. (This is a component of Uniqueness in the VRA; see Visual Resource Assessment, Uniqueness, and Scenic Icon.)

Geologic Hazards: Natural geologic processes (i.e., rockfall) that occur or could potentially occur in locations that present a threat to humans or developed areas.

Habitat: The place, including physical and biotic conditions, where a plant or an animal usually lives.

Herbicide: Pesticide that specifically targets vegetation.

Historic (VRA component): Designation for a place where the viewing area, infrastructure, or anthropogenic use is over 50 years old. Vista points are considered potentially *historic* if the point has been identified in early maps or has been in existence for over 50 or 100 years. Park documents such as the *List of Classified Structures,* the *Cultural Landscape Inventory,* and the *National Register of Historic Places* would be consulted to make this determination. (This is a component of Uniqueness in the VRA; see Visual Resource Assessment and Uniqueness. See also Historic District, Property, and Structure.)

Historic District: A geographically definable area, urban or rural, possessing a significant concentration, link, or continuity of sites, landscapes, structures, or objects, united by past events or aesthetically by plan or physical developments. A district may also be composed of individual elements separated geographically but linked by association or history.

Historic Property: Under NHPA and NEPA, a prehistoric or historic district, site, building, structure, object, landscape, or traditional cultural resource to which American Indians attach cultural and religious significance that is listed in, or eligible for listing in, the *National Register of Historic Places* (36 CFR 800.16(1) 40 CFR 1508.27 (b)(8)).

Historic Structure: Any built object or structure listed, or eligible for listing, in the *National Register of Historic Places*.

Hydric:

1. Vegetation: generally refers to vegetation found in very wet environments.
2. Soils: refers to soils characterized by very wet conditions.

Iconic View (VRA component): A vista point and associated viewing area that is widely recognized as famous, and typically is used by multiple well-known artists and photographers. (This is a component of Uniqueness in the VRA; see Visual Resource Assessment, Uniqueness, and Scenic Icon.)

Impact (environmental): A measure of whether the effect of an action would improve or harm the resource and whether that harm would occur immediately or at some later point.

Impairment: Defined in the Organic Act and the General Authorities Act as an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including opportunities that would otherwise be present for the enjoyment of those resources or values (see Impact).

Implementation Plan: A plan that tiers off of programmatic plans (like the *General Management Plan*) and focuses on how to implement an activity or project needed to achieve a long-term goal. Implementation plans may direct specific projects as well as ongoing management activities or programs. They provide a more extensive level of detail and analysis than do general management plans. Implementation plans are required to undergo NEPA review.

Implementation Project: Implementation projects are specific actions identified in an implementation plan (see Annual Work Plan).

Infrastructure: The built environment that is related to a specific human activity such as transportation or recreation. An example is the pavement required to park an automobile so a visitor can see a vista.

Intactness (VRA component): The level of incompatible and intrusive change affecting a vista's coherence, unity, harmony, pattern, and balance. Intrusive changes to intactness are permanent or semipermanent, but do not refer to temporary intrusion. For example, infrastructure development such as buildings may be an intrusion to vista intactness, while vegetation growth resulting in an obscured vista is not.

Intensity (impact): The degree or extent of an impact on a resource, generally described in this EA as negligible, minor, or moderate.

Intensity (management): The degree or extent of management actions when reestablishing a vista. Extent can be quantified by area, number, and types of species removed, as well as the amount of revegetation.

Interdisciplinary Team: A diverse group of professional resource specialists who analyze the effects of alternatives on natural and other resources and guide decisions. Through interaction, participants bring different points of view and a broader range of expertise.

Intergrade: As in vegetation types; to merge gradually one with another through a continuous series of intermediate forms.

Interpretive (VRA component): The value of a viewing area and associated vista for their unique educational and/or interpretive use. This is typically based on what is seen at or from the viewing area, and is not based on infrastructure present. For example, a site-specific and unique phenomenon (such as a geologic or biologic feature that is not seen elsewhere) or process that an interpretive ranger can elaborate on is considered interpretive. The presence of an interpretive sign itself is not. (This is a component of Uniqueness in the VRA; see Visual Resource Assessment, Uniqueness, and Viewing Area.)

Landscape: A large land area composed of interacting ecosystems that are repeated due to factors such as geology, soils, climate, and human impacts.

Lithic: Pertaining to or consisting of stone.

Lop: Brush clearing technique, in which material is cut away from a tree or shrub, usually through the use of hand tools.

Maintenance (vista management): The upkeep of a scenic vista and its associated viewing area. The intent of cyclic vista maintenance is to keep tree and shrub regrowth to a minimum to keep managed vistas open; trees and shrubs are removed before they become large enough to obscure vistas. During maintenance activities, crews would assess the condition of the vista, and then immediately remove any trees smaller than 6 inches diameter breast height as needed. Maintenance activities would be subject to all of the limitations of the initial clearing actions, and removal of trees larger than 6 inches would need to go through the annual work plan review process.

Management Action: Any activity undertaken as part of the administration of the national park.

Meadow: Tracts of moist low-lying and usually level grasslands, characterized by a mix of grasses, sedges, and forbs, and a lack of woody vegetation. Generally, the water table is just below the surface of the soil, and the most abundant vegetation is usually favored by wet but not constantly flooded soil. Meadows in Yosemite are typically surrounded by dense forest, and meadow productivity varies by elevation and hydrologic regime (see also Wetland).

Mesic:

1. Moderately moist climates or environments.
2. Vegetation: generally refers to vegetation found in moist environments.
3. Soils: refers specifically to soils with mean annual temperatures of 8 to 15 degrees centigrade.

Metamorphic: Rock that has undergone a change in structure or composition as a result of pressure and heat.

Microbial: Referring to a minute life form or microorganism.

Middle Ground (vista management): The middle part of a view, when considering the depth of a scenic vista. The middle ground is located from 60 m to 1 km away from the viewer and viewing area, or

roughly up to the maximum width of the Yosemite Valley floor (see Depth, Foreground, and Viewing Area).

Mitigation: An activity designed to avoid, minimize, rectify, eliminate, or compensate for impacts of a proposed project. A mitigation measure should be a solution to an identified environmental problem.

Montane (zone): This zone is broken up into upper and lower montane zones, and covers large, midelevation portions of the park, from 900-2,400 m (about 3,000 ft. – 7,900 ft.). The climate in this zone is characterized by short cool summers and cold winters, and it is the lowest zone that regularly receives a majority of its precipitation in the form of snow. The montane zone is a forest-dominated zone interspersed with biologically diverse meadows. The vegetation types within this zone are numerous and include montane chaparral, canyon live oak forest, California black oak woodland, riparian woodland, ponderosa pine/bear clover forest, ponderosa pine/mixed conifer forest, white fir/mixed-conifer forest, giant sequoia/mixed-conifer forest, western white pine/Jeffrey pine forest, red fir forest, Sierra juniper, and montane meadows.

Mosaic: Areas with a variety of vegetation communities over a landscape. For example, areas with trees and areas without trees occurring over a landscape.

Mulch: A ground covering of wood chips, used in landscaping or plant revegetation, that is spread on the ground around plants. This process is carried out to prevent excessive evaporation or erosion, enrich the soil, and inhibit growth of exotic plant species (see Chip).

Native (plant): A plant that develops, generates naturally, or has existed for many years in an area.

Natural Processes: All processes, such as hydrologic, geologic, and ecosystemic, that are not the result of human manipulation.

Negligible (impact): The measurable or anticipated degree of change would not be detectable or would be only slightly detectable. Localized or at the lowest level of detection.

Nematode: Any unsegmented worm of the phylum Nematoda, having an elongated, cylindrical body; a roundworm.

Neotropical: Belonging or pertaining to a geographical division comprising that part of the New World extending from the Tropic of Cancer southward.

No Action Alternative: The most likely condition expected to exist in the future if current management continues unchanged. For this Environmental Assessment, the no action alternative would mean that the park would not implement a program to reestablish and maintain vistas.

Nonnative Species: Along with “introduced species” and “nonindigenous species,” this is one of the terms most commonly used to describe a plant or an animal species that is not originally from the area that it inhabits. Similar terms include “alien species,” “exotic species,” and “foreign species.” This term has also been defined as a species whose presence is due to intentional or unintentional introduction as a result of human activity.

Organic: Relating to, or derived from, living organisms.

Organism: A form of life considered as an entity; an animal, plant, fungus, protistan, or moneran.

Perennial: A plant that lasts through the year, and lives for three or more years.

Population: A group of potentially interbreeding individuals of the same species found in the same place at the same time.

Preferred Alternative: The alternative within the range of alternatives presented in an Environmental Assessment that the agency believes would best fulfill the purpose and need of the proposed action. While the Preferred Alternative is a different concept from the Environmentally Preferable Alternative, they may be the same for some Environmental Assessments.

Prescribed Fire: Any fire ignited by management actions to meet specific objectives. Prescribed fires are conducted in accordance with prescribed fire plans.

Professional Team Assessment: A fairly unstructured scenic vista ranking determination, or Visual Resource Assessment. Park staff would use objective criteria (although criteria could be different from site to site) meant to rank sites based on scenic and cultural value. Ease of management, required mitigation, or other issues that could complicate management are not evaluated during this process, as they are addressed in the Resource Review done before an annual work plan is implemented (see Annual Work Plan, Resource Review, and Visual Resource Assessment).

Protozoa: A primarily unicellular organism that is usually non-photosynthetic and exists singly or aggregates into colonies.

Rare Species: A plant or animal species that is state or federally listed as threatened or endangered (see Threatened Species and Endangered Species).

Relict: A species or community living in an environment that has changed from that which is typical for it.

Restoration: Holistic actions taken to modify an ecosystem to achieve desired healthy and functioning conditions and processes.

Resource Review: A mitigation process in which resource management specialists are consulted before an annual work plan can be implemented. During this process, potential scenic vista natural resource concerns are assessed by subject matter experts. Resource concerns that could be assessed during review include wildlife, rare plants, archeology, wilderness, fire management, traffic, visitor safety, and other issues. Subject matter experts could then add limitations as needed to protect resources, and if concerns were unable to be mitigated, resulting in an amended Annual Work Plan, then the plan for that vista site could be eliminated from management consideration.

Revegetation: For the purposes of this plan, refers to replacement or augmentation of low-growing, native plants at a vista site that has been managed.

Riparian Areas: Areas that are on or adjacent to rivers, streams, lakes, or ponds.

Riparian Corridor: The land that is immediately adjacent to a stream or river.

Riparian Ecosystem: The ecosystem around or next to water areas that support unique vegetation and animal communities as a result of the influence of water.

Scenic: Of or relating to landscape scenery; pertaining to natural or natural-appearing scenery; constituting or affording pleasant views of natural landscape attributes or positive cultural elements.

Scenic Classification: Classification system developed in the 1980 *General Management Plan* to prioritize scenic degree of different areas within Yosemite Valley (see GMP). Classifications were broken up into three degrees, including A, B, and C-Scenic:

1. A-Scenic: Included areas in scenic views commonly chosen by eminent early photographers and painters, or included the most significant scenic views that exist today, but based on the park management's observations of frequently used viewing areas (includes all meadows and the Merced River).

2. B-Scenic: Areas included in the scenic views less commonly chosen by historic photographers and painters, or that compose less significant modern views, based on park management's observations.
3. C-Scenic: Areas of minor quality and areas that can accept visual intrusion without detracting from either primary or secondary vistas.

Scenic Icon: Identified in the GMP as the following features in Yosemite Valley: Half Dome, Yosemite Falls, El Capitan, Bridalveil Fall, Three Brothers, Cathedral Rock and Spires, Sentinel Rock, Glacier Point, North Dome, Washington Column, and Royal Arches (see GMP, Iconic, and Scenic).

Scenic ORV (Outstanding Remarkable Value): The scenic Outstanding Remarkable Value (ORV) component of the Wild & Scenic Rivers Act. This ORV analyzes scenic resources along a river that has been designated as Wild & Scenic, from the perspective of a person situated on the riverbank, or on the river.

Scenic Resource: In general, attributes, characteristics, and features of landscapes that provide varying degrees of benefits to humans. The following Scenic Resources are identified in the GMP in the park: Sierra Crest, Sequoia Groves, Yosemite Valley, Tuolumne Meadows, Tenaya Lake, Clark Range, Cathedral Range, Merced River, and Grand Canyon of the Tuolumne River (see GMP and Scenic).

Scenic Value: The assessed value given to a particular vista point. Principally, this assessment refers to the aesthetic quality and scenery of a vista, but also may include other criteria such as infrastructure present, special uses, or historic significance.

Sensitive Species: Plant or animal species that are susceptible to habitat changes or impacts from activities.

Significant Impact: For the purposes of NEPA and DO 12, an impact to a NRHP property would be considered significant when an adverse effect cannot be resolved by agreement among SHPO, ACHP, American Indian tribal governments, other consulting and interested parties, and the public. The resolution must be documented in a memorandum or programmatic agreement or the NEPA decision document.

Slash: Branches and other residue left on a forest floor after the cutting of timber for the clearance of scenic vistas.

Snag: A standing dead tree. Snags are important and critical habitat for a variety of wildlife species and their prey because they provide food, shelter, and reproductive sites. Generally speaking, snags become more useful to wildlife over time.

Socioeconomics: The study of the interrelation between economics and social behavior. Implementation of the *Scenic Vista Management Plan* would not result in measurable effects on the regional or gateway community economies, or cause changes in visitor attendance or visitor spending patterns. Therefore, this resource topic was dismissed from further analysis in this document.

Special-Status Species (plant): Plants (including nonvascular plants) that are either listed as endangered or threatened under the Federal ESA or CESA; or considered to be rare under the California NPPA; or considered to be rare (but not formally listed) by resource agencies, professional organizations (e.g. CNPS, California Lichen Society), and the scientific community.

Special Use (VRA component): A specific and intended use, often commercial or requiring a permit, that is associated with a vista and its viewing area. Examples of special uses include areas of traditional practices, traditional landscapes, weddings, commercial photography permits, and tram stops. (This is a component of Uniqueness in the VRA; see Visual Resource Assessment, Uniqueness, and Viewing Area.)

Speciation: The evolutionary formation of new biological species, usually by the division of a single species into two or more genetically distinct ones.

Species: A class of individuals having common attributes and designated by a common name; a category of biological classification ranking immediately below the genus or subgenus, comprising related organisms or populations potentially capable of interbreeding.

Stand: A group of trees that occupies a specific area and is similar in species, age, and condition.

State Listed (plant): A plant that is considered to be rare in California. The California Native Plant Society (CNPS) has maintained and updated a master list, containing five separate lists, in its *Inventory of Rare and Endangered Plants of California*, now in its sixth edition.

Subalpine (zone): This zone extends from 2,070 m (about 7,800 ft.) up to tree line, and is made up of the following vegetation types: whitebark pine/mountain hemlock forest, lodgepole pine forest, and subalpine meadows. This zone has a shorter growing season due to the long, cold, snowy winters.

Target Conditions: Land or resource conditions that are expected to result if goals and objectives are fully achieved. Target conditions referenced in the *Scenic Vista Management Plan* are derived from the 2002 *Fire Management Plan* (FMP) and the 1997 *Vegetation Management Plan* (VMP), and are based on vegetation target conditions, organized by vegetation type. The FMP details quantitative vegetation target conditions, whereas the VMP details more qualitative target conditions. The combination of the two provides for more comprehensive management targets.

Temperate: Moderate in respect to temperature; not subject to prolonged extremes of hot or cold weather.

Threatened Species: Plant or animal species likely to become endangered throughout all or a specific portion of their range within the foreseeable future (as designated by the U.S. Fish and Wildlife Service under the Endangered Species Act of 1973).

Traditional Cultural Properties: A resource to which American Indian tribes, or other cultural groups, attach cultural and/ or religious significance that is eligible for listing or is listed, on the *National Register of Historic Places*, and includes structures, objects, districts, geological and geographical features, and archaeology. *National Register Bulletin* 38 provides guidance for identifying and evaluating such properties for eligibility.

Understory: The trees and woody shrubs growing beneath branches and foliage formed collectively by the upper portions of adjacent trees.

Ungulate: Belonging or pertaining to the Ungulata, a former order of all hoofed mammals, now divided into the odd-toed perissodactyls and even-toed artiodactyls.

Uniqueness (VRA component): The rarity of a view in a local, regional, and national context. Moreover, a unique vista is a view of a landscape or feature that is unequalled, very rare, or uncommon. There are six items that can be quantified when ranking vividness. There are six items that can be quantified when ranking uniqueness. The more of these elements that exist in a vista, the more unique, and thus scenic, it is considered to be (see Historic, Interpretive, Special Uses, CMP Feature, Iconic, and Geographic).

Value: The relative merit or importance assigned to a scenic vista, when considering it for management action. Value is assigned to a scenic vista based on investigations done by resource managers for each point. A value ranking can be arrived at by either using either the professional judgment or the visual resource assessment approach (see Professional Judgment and Visual Resource Assessment).

Variety (VRA component): The amount of variation of forms and material seen; an intermixture, diversity, or succession of different things, forms, or qualities in the landscape. Components that contribute to vista variety include landscape-scale plant and vegetation patterns and landform

patterns, as well as water. Landscape-scale vegetation patterns are defined as evident groupings of distinct vegetation communities. This component usually applies only to vistas with distant views, and to vistas containing meadows. (Variety is a component of Vividness in the VRA; see Visual Resource Assessment and Vividness.)

Vascular: Refers to plants that have specialized tissue for transporting fluids and other substances.

Vegetation Type: Refers to the dominant vegetation communities that occur within vegetation zones. These vegetation types typically consist of a variety of dominant tree species, sometimes combined with a specific shrub understory. Vegetation types often integrate among each other. For example, ponderosa-mixed conifer and blue oak woodland are vegetation types.

Vegetation Zone: Specific elevational bands in the park along which dominant vegetation communities live. For the purposes of this plan, the park's vegetation communities, or vegetation zones, have been classified as follows: Foothill Woodland, Montane Meadow, Lower Montane Forest, Upper Montane Forest, Subalpine Meadow, and Subalpine Forest. Although there is an Alpine zone within the park, it is not examined for the purposes of this plan, as it does not occur within the plan's potential project area.

Vernal: Of, relating to, or occurring in the spring.

Viewing Area: The vista point area in which visitors view a scenic vista. This area is usually located adjacent to or within day use and recreational areas, parking lots, roadside turnouts (pullouts), bridges, beaches, and front country trail vista points. Some viewing areas have intended and designed infrastructure, such as an interpretive sign, a viewing platform, or a retaining wall (see Infrastructure and Visitor).

Visitor: A temporary occupant of an area.

Vista: A distant view, often seen through a long passage, often with a focal point that focuses upon a specific feature in the landscape.

Visual Resource Assessment (VRA): A tool to document and assess the scenic quality of vistas with quantified results comparable to other points. Park staff has adapted VRA for use in Yosemite National Park to structure appropriate management actions relative to ranges of scores. VRA scores would determine the limits of vista management and restoration actions throughout the park.

Vividness: In the context of scenic vista management, vividness is defined as the intensity, strength, or memorability of what is viewed. The degree by which a site is memorable is called the "Oh, wow" factor. There are six items that can be quantified when ranking vividness. These elements are expansiveness, framing, focal point, depth, variety, and ephemeral images. The more of these elements that exist in a vista, the more vivid, and thus memorable and scenic, it is considered to be (see Expansiveness, Framing, Focal Point, Depth, Variety, and Ephemeral Images).

Watershed: The entire region drained by a waterway, lake, or reservoir. More specifically, a watershed is an area of land above a given point on a stream that contributes water to the streamflow at that point.

Wetland: As defined by the U.S. Fish and Wildlife Service (USFWS) and adopted by the National Park Service, wetlands are lands in transition between terrestrial and aquatic systems, where the water table is usually at or near the surface, or shallow water covers the land (at least seasonally). This includes bogs, fens, and wet meadows (see Bog, Fen, or Meadow).

Wilderness: An area of land designated by Congress to be managed according to the Wilderness Act of 1964.

Wildland: An area in which development is essentially nonexistent, except for roads, railroads, power lines, and other transportation facilities (see Wildland Urban Interface).

Wildland Fire: Any non-structural fire that occurs on wildlands that is not a prescribed fire.

Wild and Scenic River: A river that possesses distinctively unique or "outstandingly remarkable values" that sets it apart from all other rivers. Wild and Scenic Rivers are designated to protect their free-flowing condition and to protect and enhance their unique values for the benefit and enjoyment of present and future generations under the Wild and Scenic Rivers Act of 1968 (16 USC 1271).

Wildland Urban Interface (WUI): The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels (see Wildland).

Xeric: A soil moisture regime common to Mediterranean climates that have moist, cool winters and warm, dry summers. A limited amount of water is present, but does not occur at optimum periods for plant growth.

VII ACRONYMS AND ABBREVIATIONS

AA: Archeology and Anthropology
ac: acres
AL: Alpine
ACHP: Advisory Council on Historic Preservation
AIRFA: American Indian Religious Freedom Act
APE: Area of potential effect
ARB: Air Resources Board
ARPA: Archeology Resource Protection Act
BA: Barren
BLM: Bureau of Land Management
BSSC: California Bird Species of Special Concern
CAA: Clean Air Act
Caltrans: California Department of Transportation
CBA: Choosing By Advantages
CCC: Civilian Conservation Corps
CCCP: California Climate Change Portal
CCS: California Candidate
CDFG: California Department of Fish and Game
CE: California Endangered
CEQ: Council on Environmental Quality
CEQA: California Environmental Quality Act
CESA: California Endangered Species Act
CFC: Chlorofluorocarbon
CFP: California Fully Protected
CFR: Code of Federal Regulations
cfs: cubic feet per second
CH_4: Methane
CLI: Cultural Landscape Inventory
CLR: Cultural Landscape Report
CMP: Comprehensive Management Plan
CNDDB: California Natural Diversity Database
CNPS: California Native Plant Society
CO_2: Carbon Dioxide
CSC: California Species of Special Concern
CSERC: Central Sierra Environmental Resource Center
CT: California Threatened
CWA: Clean Water Act
dB: decibel(s)
dBA: decibels on the A-weighted scale
dbh: diameter at breast height
DEIS: Draft Environmental Impact Statement
DNC: Delaware North Company
DO: Director's Order
DOI: Department of the Interior
DOT: Department of Transportation
EA: Environmental Assessment
EIS: Environmental Impact statement
EMS: Emergency Medical Services
EO: Executive Order
EPA: U.S. Environmental Protection Agency
ESA: Endangered Species Act
FC: Federal Candidate
FE: Federal Endangered
FHWA: Federal Highway Administration
FMP: Fire Management Plan
FMSS: Facilities Management Software System
FOIA: Freedom of Information Act
FONSI: Finding of No Significant Impact
FRi: Fire Return Interval
FRiD: Fire Return Interval Departure
FT: Federal Threatened
FW: Foothills Woodland
GHGs: Greenhouse gases
GMP: General Management Plan
GWP: Global Warming Potential
ha: hectares
HAL: History, Architecture and Landscapes Branch, Resources Management and Science, Yosemite National Park.
HCFS: Hydrochlorofluorocarbons
HSR: Historic Structures Report
IPMP: Invasive Plant Management Plan

IWSRCC: Interagency Wild & Scenic River Coordination Council
LM: Lower Montane
LWD: large woody debris
ME: meadow
MM: Montane Meadow
MMt: million metric tons
NAAQS: National Ambient Air Quality Standards
NAGPRA: Native American Graves Protection and Repatriation Act
NEPA: National Environmental Policy Act
NHPA: National Historic Preservation Act
NMFS: National Marine Fisheries Service
NO: Nitrogen Monoxide
NO_X: Nitrogen Oxides
NO_2: Nitrogen Dioxide
N_2O: Nitrous Oxide
NMFS: National Marine Fisheries Service
NPPA: Native Plant Protection Act
NPS: National Park Service
NRHP: National Register of Historic Places
NWI: National Wetlands Inventory
ORVs: Outstandingly Remarkable Values
OSHA: Occupational Safety and Health Administration
PA: Programmatic Agreement
PEPC: Planning, Environment and Public Comment
PL: Public Law
PM: particulate matter
PM10: particulate matter less than 10 microns in diameter
PPE: personal protective equipment
R: Riparian
READ: Resource Advisor
RMS: Resource Management & Science Division, Yosemite National Park
ROD: Record of Decision
ROS: Recreation Opportunity Spectrum
RWQCB: Regional Water Quality Control Board
SA: Subalpine Forest
SM: Subalpine Meadow
SAR: Search and Rescue
SFM: Statement for Management
SHPO: state historic preservation officer
SVMP: Scenic Vista Management Plan
SWRCB: State Water Resources Control Board
TCP: traditional cultural property
UNIPCC: United Nations Intergovernmental Panel on Climate Change
USC: United States Code
USCOE: United States Army Corps of Engineers
USDA: United States Department of Agriculture
USFS: U.S. Forest Service
USFWS: U.S. Fish and Wildlife Service
USGS: U.S. Geological Survey
UM: Upper Montane
uv: ultraviolet
VER: Vegetation and Ecological Restoration Branch, Resources Management and Science, Yosemite National Park
VMP: Vegetation Management Plan
VOC: Volatile Organic Compound
VRA: Visual Resource Assessment
WSRA: Wild and Scenic Rivers Act
YA: Yosemite Association
YARTS: Yosemite Area Regional Transit System
YI: Yosemite Institute
YNP: Yosemite National Park
WUI: Wildland Urban Interfac

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Appendix A Visual Resource Assessment Process

Overview

The Visual Resource Assessment (VRA) is a tool to document and assess the scenic quality of a vista. The quantified results are used to compare vista points and prioritize vista management. The structure of the VRA, if the assessment is performed by different people, ensures that site scores may be slightly different, but will be close. The quantified results categorize vistas into high, medium, or low VRA scoring groups and would determine vista management priorities and actions limits throughout the park. What this method provides is a more transparent mechanism that regulates the process and provides a reasonably predictable program over a wide range of sites.

Adaptation to Yosemite

Park staff has adapted the VRA (NPS 2009f) for use in Yosemite National Park. Blue Ridge Parkway originally developed this process as a method of working with stakeholders to preserve scenic resources seen from the Parkway (NPS 2009f). Other National Park Service (NPS) units have since adapted it for local use, including in the Mississippi National River and Recreation Area, and the Grant-Kohrs Ranch National Historic Site. The team at Blue Ridge spent years developing this program, working with academic researchers and public input (NPS 2009f). Adapting this tool accounted for geographic differences between Blue Ridge and Yosemite, as well as differences in park management documents.

Blue Ridge Parkway is a linear feature designed for scenic auto-touring as the primary activity. Views tend to be from the road, usually from a ridgeline, out to surrounding valleys, hills, farms, and forests. Distinct, individual features can be seen from only a few turnouts. The Blue Ridge VRA's primary function is to serve as a tool to interact with the surrounding communities. Many of the views from Blue Ridge Parkway contain a great deal of depth, but are mainly across privately owned land. The VRA aids in helping surrounding communities understand the scenic value of their own land.

Figure A-1. Characteristic Vista from the Valley Floor Looking up to Yosemite Falls from Cook's Meadow Boardwalk. (NPS 2009)

The Yosemite VRA's main function is to decrease the subjectivity of vista management, making decisions and actions more transparent and predictable. Most of the land seen from Yosemite is owned and managed by the NPS, the U.S. Forest Service (USFS), and the Bureau of Land Management (BLM). USFS and BLM must obtain NEPA compliance for major actions, and Yosemite could use those agencies' compliance processes to monitor actions that could impact Yosemite National Park's scenic resources. Yosemite National Park has specific scenic features, identified in the *General*

Management Plan (GMP), that are closely associated with the park. The roads in Yosemite were also designed to provide views while driving, but visitors must often stop to see the full panorama. The ability for visitors to see these icons and scenic resources from different locations has been identified as important to the park (NPS 1980a). These icons and scenic features can be seen from a variety of locations, from a variety of geologic settings, and provide a sense of place to Yosemite National Park.

Figure A-2. Vista from Cook's Meadow boardwalk to North Dome on the left and Half Dome on the right (obscured by conifers) (NPS 2009)

Half Dome is a scenic icon that can be seen from numerous points in the park. A good example is the boardwalk in Cook's Meadow, which contains very photogenic vistas of Yosemite Falls and a now-obscured view to Half Dome. In Yosemite Valley, vistas tend to be from the Valley floor, looking up, fairly close to large dramatic features. From Glacier Point, the view of Half Dome provides a much more distant and panoramic view from an open and elevated position, giving Half Dome a different quality, resulting in a different visitor experience.

Assessment Criteria

The VRA ranks vistas on the following categories: vividness, uniqueness, access, and intactness. The Yosemite system has redefined some of the VRA criteria, such as depth, to integrate park planning documents, to account for the relatively narrow size of Yosemite Valley, and to include visitor use patterns and special use permits.

Figure A-3. Vista from Glacier Point revealing Half Dome in a very different context than from Cook's Meadow (NPS 2009)

Vividness is the degree to which a site is memorable, or the "Oh, wow" factor. It is measured by the presence and amount of *expansiveness*, *framing*, *variety* (of surface patterns and textures), *focal point*, *depth*, and *ephemeral images*. The more of these factors that are present, usually the more scenic a vista is.

Expansiveness is a sense of a wide and comprehensive landscape. For example, the view from Glacier Point is expansive, but the vista from the lower Yosemite Falls footbridge is not, because it is closely framed by the surrounding trees.

Framing describes the way trees and/or landforms *frame* vistas to make them clearer and more distinct.

Variety is the amount of variation of forms and material seen; however, too much variety is clutter and not positive.

A *focal point* is a point that immediately draws the eye and captures a viewer's interest.

Depth is measured in distinct layers of a landscape. A layer can be distinctive due to the materials or distance. For example, forbs in a meadow are distinct from trees in a forest, which in turn are distinct from a granite cliff face. Distance can also produce layers, as mountain ridge lines can stand out as being distinct from other ridgelines.

Ephemeral images refer to the opportunity to see uncommon events or dramatic changes with seasons, such as wildlife, waterfalls, clouds on landform, and seasonal color.

Uniqueness measures how rare a vista is, and rarity equates with higher value. If an object of a vista can be seen from only one point, or the context of the vista is unique, it has more value. It is measured by the following factors: *geographic; iconic view; number of features noted in comprehensive management plans; special uses; interpretative or educational ability;* and *historic*.

Geographic: For example, there may be several roadside turnouts with vistas to Bridalveil Fall close to each other, and each would have a low *geographic* score because the context of both is similar: a roadside turnout, and the object of the vista, Bridalveil Fall.

Icon views are those vistas that are well known because they appear in works by well known artists (painters, photographers, and artists in other media). This includes older photographs by Watkins and Muybridge, water colors by Chuira Obata, photographs by Ansel Adams, and work by popular, contemporary artists such as Penny Otwell, and many more.

Comprehensive management plans (CMPs) can mention specific views or features as scenic resources. The 1980 *General Management Plan* noted park features that have been closely identified with Yosemite National Park as important icons or scenic features. Seeing one, or more, scenic icons and resources at a given vista, increases the VRA score. These features are identified in Table A-1.

Table A-1. Features noted in the Yosemite National Park General Management Plan

Important Scenic Icons	Scenic Resources
Half Dome	*Sierra Crest*
Yosemite Falls	*Sequoia Groves*
El Capitan	*Yosemite Valley*
Bridalveil Fall	*Tuolumne Meadows*
Three Brothers	*Tenaya Lake*
Cathedral Rock and Spires	*Clark Range*
Sentinel Rock	*Cathedral Range*
Glacier Point	*Merced River*
North Dome	*Grand Canyon of the Tuolumne*
Washington Column	
Royal Arches	

When complete, the Tuolumne and Merced river plans will also be CMPs. If other scenic features are identified in these plans, the VRA would adapt to accommodate these features.

Special uses are vista points that have associated uses that increase the value to the visitor. These are uses such as weddings, stops on the tram tour, and specific sites listed on commercial photography permits.

Interpretive or educational: A vista point may also have unique *interpretative or educational ability* because of a geologic or biologic feature that is not seen elsewhere.

Finally, several vista points are potentially *historic* because they have been identified in early maps or been in existence for over 50 or over 100 years. Park and NPS documents such as the *List of Classified Structures,* the cultural landscape inventories, and the *National Register of Historic Places* would be consulted to make this determination.

Access is important to the visitor experience because the easier a vista is to see, the more visitors are likely to see it. This factor is measured in terms of *ease of access* and *infrastructure present*.

Ease of access refers to how strenuous an effort is required to see the vista. Points close or at parking areas are scored higher than points requiring a strenuous walk to access.

Infrastructure present generally notes paved areas and other improvements that can give the visitor a fuller experience with less effort.

Intactness is the level of incompatible and intrusive change from an idealized landscape. Yosemite National Park is noted for, and originally was set aside because of, its dramatic scenic beauty. Typically this means a view without built structures; however, it can also include buildings if that is what the original vista intended, or how it appeared when it was first noted as a vista point. This is not a measure of how well the vista can currently be seen, but a percentage of the view permanently compromised due to built structures.

Scoring

VRA scores are grouped into the following categories:

- High (10.0-18) (30% of sites currently assessed);
- Medium (7.25-9.99) (40% of sites currently assessed); and
- Low (7 and below) (30% of sites currently assessed).

Inventory Methodology

Resource Management and Science (RM&S) field technicians conducted a rapid assessment and representative inventory of scenic vistas throughout Yosemite National Park in the spring and summer of 2009. The 1980 *General Management Plan* (GMP) was used as a foundation for field data collection. The 11 Iconic Features in Yosemite Valley and nine Scenic Resources throughout the park identified in the GMP (NPS 1980a) were considered (Table A-1) in locating existing vista points.

In Yosemite Valley, scenic vistas were located using established contemporary vista points, roadside turnouts, day use and recreational areas, parking lots, bridges, beaches, and general photo opportunities of the identified Iconic Features. Historic vista points that have become overgrown and been forgotten by visitors were also surveyed. Outside of Yosemite Valley, scenic vistas were located using roadside turnouts, previously existing roadside vista points, and day use areas. For the Wawona District of the park, vista points at Wawona Point, the Mariposa Grove, and along Highway 41 were inventoried and assessed. Many turnouts were inventoried and assessed along Glacier Point Road, including Washburn Point and Glacier Point. For the Mather District, data were collected for vista points along the Big Oak Flat Road, near the Highway 120/140 intersection, and at Hodgdon Meadow and Hetch Hetchy; nearly every roadside turnout was surveyed. Along Tioga Road, vista points were assessed and inventoried

from Crane Flat to the Tioga Pass Entrance Station. Nearly every roadside turnout was surveyed for each of these districts, and 235 points were surveyed overall parkwide (Figure A-4).

Data Collection Methods

Data collection method guidelines were followed by field technicians when conducting scenic vista inventories and assessment. These guidelines ensured that data collected in the field would be accurate and consistent. All scenic vistas inventoried, and their spatial locations, were documented using a Global Positioning System (GPS) unit. Overlays of vista points identified in the GMP as containing views of the 11 Iconic Features in Yosemite Valley, and several Significant Scenic Resources throughout the park, were placed on vista point spatial locations. Technicians collected contemporary photo points for each vista, but some repeat photographs from historic points were taken as well.

VRA Data Collection and Scoring

VRA Data Collection Methods

1. Conduct VRA scoring for all vistas possible from a point. Each view has a separate score. If two focal points are within 90°, they are close and could be considered as one vista. (See VRA score sheet.)
2. Document vistas by taking one photo of each vista.
3. Collect GPS data for primary, designed, or highest ranking vista. Do not include secondary vista if the secondary is blocked by a forest, a dense stand of trees, or trees that are >40 inches dbh.
4. Conduct tree removal analysis for any vista ranking higher than 9 (see Tree Removal Analysis datasheet).
5. Note any obvious needs regarding infrastructure or maintenance.

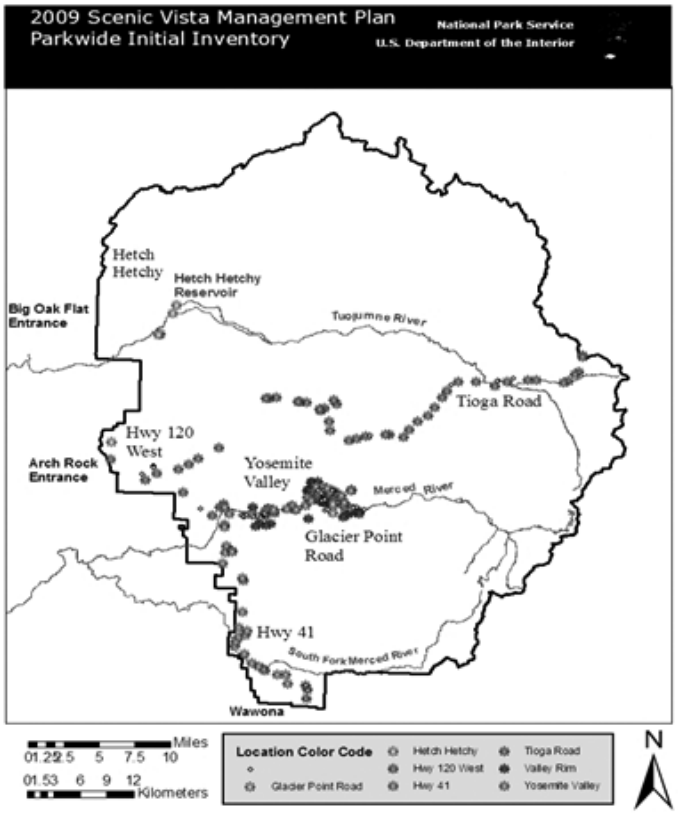


Figure A-4. 2009 Parkwide Scenic Vista Initial Inventory (NPS 2009)

VRA Scoring Notes

- Vividness, Framing scoring: Trees are considered to frame a vista if they appear within a camera's view finder (50 mm lens).
- Uniqueness, Special Uses scoring: (Meadows are unique features.)
- Access/Duration, Infrastructure Present scoring: Count paved areas and interpretive signs if they are associated with the immediate viewing area, even if they are not located in the immediate area of the viewing platform.

Photo Documentation

- Take photos as if the vista is open and unblocked by vegetation.
- Record photo bearing for the middle of the photo (focal point).
- When two iconic features in a vista have close enough viewcones to one another, only one photo is taken, in which the focal point is located between the two features.

Vista Width Definitions

With a focal point, and frame edges, a vista is assumed to be a maximum of 180° (a vista with framed edges is usually smaller than a panoramic scope of view).

- Narrow = up to 45° of total view
- Wide = >45° and up to 120° of total view
- Wider + Feathering = >120° and <180° of total view

Viewing Area

Data are collected for this attribute only if applicable. Turnouts, for example, are not considered applicable for area estimation.

Tree Removal Analysis

With focal point and frame edges of vista defined from the viewing area (remember to stay true to your focal point!):

- First, determine maximum amount of potential species for removal to improve the view, *regardless* of priority.
- Consider projected growth within next five years for each individual when considering removal.
- Then, count the minimum number of trees for removal to improve the view.
- Document *only* potential trees for removal; do not document *all* species present at a particular vista point.
- To get an accurate count, refrain from focusing entirely on the trees in the foreground; think of the trees that would be visible behind the foreground trees and whether those would obscure the vista, too.

Table A-2. Draft Visual Resource Assessment (VRA) score sheet

Yosemite National Park Scenic Vista Management Plan **Draft VISUAL RESOURCE ASSESSMENT**							**LOCATION NAME:** **RECORDER/S:** **SITE ID:**
View Valuation		*point range*	*total points VIEW 1*	*total points VIEW 2*	*total points VIEW 3*	*total points VIEW 4*	**18 points possible**
Vividness (0-6 points) No change yet from BLRI system	Expansiveness	0-1					Open and unconfined laterally, or side-to-side. Measured as width, the scene can be open on one side = 0.5 points, or both sides = 1 point
	Framing	0-1					Trees and landform create frames. One side only landform =0.25; only trees = 0.25; landform + trees = 0.5. One side with landform and trees and other side with landform OR trees = 0.75; both landform and trees, both sides =1 full point. Window framing w/intended view = 1 full point.
	Focal Point	0 or 1					A point that immediately draws your eyes = 1; subject not definite = 0
	Depth	0-1					Layering foreground through distance: 0.5 = 3-4 layers; 1 = >4 layers. Layers must be spatially distinctive (far enough apart) and/or distinct features.
	Variety	0-1					(Usually applies only to distant views and meadows) Landscape-scale plant and veg. patterns = 0.25; water = 0.25; landscape-scale landform = 0.5; excessive clutter = 0, regardless (Groupings of distinct veg. communities are evident, rather than individual plants).
	Ephemeral Images	0-1					Opportunities to see uncommon events or dramatic changes with seasons - wildlife, waterfalls, clouds and landform, etc.

Vividness

The intensity, strength, or memorability of what is viewed. The degree to which a site is memorable is called the "Oh, wow" factor. There are six items that can be quantified when ranking vividness. These elements include *expansiveness*, *framing*, *focal point*, *depth*, *variety*, and *ephemeral images*. The more of these elements that exist in a vista, the more vivid, and thus memorable and scenic, it is considered to be. Fleeting images include seasonal color, animals, and cloud displays. Depth is measured in layers. Three or more layers tends toward high scenic quality.

Yosemite National Park Scenic Vista Management Plan **Draft VISUAL RESOURCE ASSESSMENT**							**LOCATION NAME:** **RECORDER/S** **SITE ID:**
View Valuation		*point range*	*total points VIEW 1*	*total points VIEW 2*	*total points VIEW 3*	*total points VIEW 4*	
Uniqueness (0-7 points) Adapted to YOSE	Historic	0 or 1					0 = not historic (site must be known historic site, ** consult list) 0.5 = 50-100 years; 1 = more than 100 years.
	Interpretive/ Educational ability	0-1					Value of the site for unique educational/interpretive use - base on what is seen at or from the site, not infrastructure.
	Special Uses	0 to 1					weddings, commercial photography permits, tram stops, traditional uses, etc.** consult list (if exact location uncertain, except for meadows= 0 pts).
	Contains CMP features?	0 to 2					1 = 0.5, 2=1, 3=1.5, >3 = 2 CMP is comprehensive management plan** consult list. Includes 360° view of all discernable icons.
	Icon view*	0-1					Famous, used by multiple well known artists & photographers (the vista point location itself).
	Geographic	0 to 1					Proximity to other vista points (current condition) with similar views and visitor context. 0-1/2 mi.=0 , 1/2-1 mi. = 0.5, >1 mi. =1. NO other similar view also = 1.
Access/ Duration (0-5 points) Adapted to YOSE	Ease of Access	0-2					0.5 = <1/2 mile moderate to steep grade; 1 = <1/2 mile hike, even to moderate grade; 1.5 = <1/4 mile hike, even to moderate grade; 2 = Roadside access.
	Infrastructure Present**	0-2					0 = little or none; 0.5 = small paved area (1-4 cars); + 0.5 = larger paved area OR accommodates > 5 cars and/or has infrastructure; +1= interpretive sign or Yosemite Road Guide marker. **Infrastructure present: This is in the duration category because the amount and type of infrastructure directly correlates with how long visitors spend on site.

Uniqueness The rarity of a view in a local, regional, and national context. A unique vista is a view of a landscape or feature that is unequalled, very rare, or uncommon. There are six items that can be quantified when ranking vividness. There are six items that can be quantified when ranking uniqueness. The more of these elements that exist in a vista, the more unique, and thus scenic, it is considered to be.

Access/Duration Measured in the ease of visitor access to the vista point and the amount of infrastructure present at or near the viewing area. The easier a vista is to see, the more visitors are likely to see it. Ease of access generally refers to how strenuous an effort it takes to see the vista. Infrastructure present generally notes paved areas and other improvements that increase visitor experience, with less effort.

Yosemite National Park Scenic Vista Management Plan **Draft VISUAL RESOURCE ASSESSMENT**							**LOCATION NAME:** **SITE ID** **RECORDER/S**
View Valuation		*point range*	*total points VIEW 1*	*total points VIEW 2*	*total points VIEW 3*	*total points VIEW 4*	
*Intactness*** *(0-3 points) No change yet from BLRI system*	Complete: desired, designed, intended view					1	** *Intactness: Refers only to permanent or semipermanent causes for intactness (for example, vegetation obscuring view does not count).
	85% or greater unchanged					0.5	
	50-85% unchanged					0.25	
	Less than 50% unchanged from desired, designed, intended view					0	

Intactness

The level of incompatible and intrusive change, affecting a vista's coherence, unity, harmony, and pattern and balance. Intrusive changes to intactness are permanent or semipermanent, but do not refer to temporary intrusion. For example, infrastructure development such as buildings may be an intrusion to vista intactness, while vegetation growth resulting in an obscured vista is not.

Table A-3: Tree Removal Analysis datasheet

Tree Removal Analysis Datasheet						Date		Recorder/s			
Site name						SiteID		FID			
	Tree species	Under 20 inches		Over 20 inches		Over 30 inches		Over 40 inches		Maximum removal amount	Minimum removal amount
		living	dead	living	dead	living	dead	living	dead		
MANAGEMENT COMMENTS:											
Species of concern:											
Were vegetation type target conditions compromised?						yes		no		possible	

Appendix B Ecological Conditions

Vegetation Zones

The park contains five vegetation zones, generally following elevation gradients: foothill woodlands, lower montane forest, upper montane forest, subalpine forest, and alpine (Figure 3-2). The *Scenic Vista Management Plan* relies on the vegetation types described in the 2003 *Yosemite Fire Management Plan*, but also supplements this with the 1997 *Vegetation Management Plan*, based on types presented in Keeler-Wolf (1993).

Foothill Woodlands

This zone is divided into three primary vegetation types – foothill chaparral, blue oak, and foothill pine/live oak/chaparral. It covers the lower elevation areas below 600 m along the western edge of the park, including the El Portal Administrative Site. Of the 13,028 acres of potential project area in the park, 82 acres (33 ha) are located in the foothill woodland zone. It is characterized by a Mediterranean climate; winters are cool and wet, and summers are hot and dry. Nearly all precipitation is present within the winter months (generally in the form of rain in the lower elevations and snow at higher elevations).

Foothill Chaparral

This vegetation type covers a total of 1,768 acres (715 ha) between 500 and1,500 m (1,640-4,920 ft.) elevation, mostly near the park boundary on the north-facing slope of the Merced River canyon and in the EI Portal Administrative Site. Within the potential project area, 2 acres (0.80 ha) are comprised of this vegetation type. Typical locations include the north-facing slope of the Merced River Canyon below Arch Rock entrance station; patches occur in El Portal, west of Crane flat, and north and south of Wawona. This vegetation type does not inhabit the foothill woodland zones' potential project area.

Dominant species include manzanita *(Arctostaphylos viscida* and *A. viscida* spp. *mariposa),* chaparral whitethorn *(Ceanothus leucodermis),* buckbrush, deerbrush, mountain mahogany, interior live oak, and other shrubby oak species. Foothill chaparral is nearly impenetrable, and there is often a considerable accumulation of leaf litter with little or no understory vegetation. It is found on dry, rocky, often steep slopes with little soil.

This vegetation type is strongly adapted to and dependent on frequently recurring fires (Biswell 1974). Fires are characteristically intense, removing all or most of the above-ground biomass. The natural fire regime perpetuates a mosaic of age classes within the chaparral vegetation type, decreasing the chance for widespread wildfires. Under pristine conditions, the intense, fast-moving fires characteristic of chaparral were confined by natural fuel breaks formed by age-class boundaries and topographic features.

Fire Return Intervals vary from 30 to 60 years, with the average at 30 years. A majority of this area has Fire Return Interval Departures (FRID) higher than four, indicating that the area is impacted by fire exclusion.

Blue Oak Woodland

This vegetation type lives on only 473 acres (191 ha) of the park. It lives along the north side of the Merced River canyon between 500 and 800 m (1,640-2,624 ft.), and does not inhabit the foothill woodland zones' potential project area.

Dominant species include blue oak *(Quercus douglasii),* interior live oak, foothill pine, California buckeye, poison oak, wild oats *(Avena fatua* and *A. barbata),* soft chess *(Bromus hordeaceus),* downy brome *(Bromus tectorum),* and ripgut-grass *(Bromus diandrus).* Grass forms the dominant ground cover between widely spaced shrubs and oaks. Most of the grasses and forbs in this vegetation type are nonnative Mediterranean annuals.

Large fires have occurred in this community, but in recorded park fire history these have all been human-caused. Natural fires have not been observed, but would be expected to occur most frequently as slow-spreading backing fires descending from the upper canyon sides. Fire is carried by the grass stratum since trees and shrubs are too widely separated to sustain a flaming front. Most of the shrubs resprout following fire and the oaks usually survive even intense fires, even though they may be severely scorched.

Fire Return Interval varies from two through 49 years, averaging eight years. FRID is generally low, although a few patches still exceed four. The area is subject to frequent prescribed fires surrounding the housing areas located there and has experienced several large wildfires as well, including the Woodlot and A-Rock fires.

The FMP has neither target conditions nor detailed monitoring data for the Foothills Woodland Zone.

Foothill Pine/Live Oak/Chaparral Woodland Type

This vegetation type is largely confined to the canyon sides and open rocky areas in valleys at elevations between 670 and 1,829 m (2,200-6,000 ft.). It covers 6,985 acres (2,827 ha) in a fairly contiguous area. Within the potential project area, 76 acres (31 ha) are comprised of this vegetation type. Typical locations include El Portal, Hetchy Hetchy, and Poopenaut Valley. Within the potential project area, 184 acres are comprised of this vegetation type.

Dominant species include evergreen, thick-leaved species such as foothill pine, canyon live oak, interior live oak, Mariposa manzanita, deerbrush, buckbrush *(Ceanothus cuneatus),* and mountain mahogany. The vegetative cover is sparse and discontinuous, with an open canopy of emergent foothill pine or an understory of nonnative grasses and an abundance of native annual herbs.

Despite containing a discontinuous fuel layer, running crown fires have occurred in this vegetation type. Fire Return Intervals vary from two to 49 years, averaging eight years, and FRID are generally low. It appears that fire suppression efforts have been largely unsuccessful in this vegetation type since widespread intense fires have continued to occur. It is probable that the natural vegetation type structure is still largely intact.

Montane Meadows

Montane meadows cover 1,530 acres (619 ha) between 1,200 and 2,400 m (3, 936-7,872 ft.), are present in both the lower and upper montane zones, and are often biologically diverse. Within the potential project area, 258 acres (104 ha) are comprised of this vegetation type. They are most common on the rolling plateaus to the north and south of Yosemite Valley, and can be subdivided into wet and dry subtypes, which may exist together in the same meadow. Leidig Meadow and Tiltill Valley are typical of wet montane meadows. Eagle Peak Meadow, Westfall Meadow, McGurk Meadow, and Mono Meadow are typical locations for boggy, montane meadows. Many of the dry meadows are found at Miguel,

Poopenaut, Hodgdon, Foresta, Yosemite Valley, and Wawona. Sphagnum bogs, or fens, include Swamp Lake, Lost Lake, and Bridalveil Meadow.

Montane Meadows are generally small and scattered (rarely larger than 100 acres (40 ha), and the largest patches occur in Yosemite Valley and Foresta. They are typically surrounded by dense forest, while meadows in the lower montane are often surrounded by California black oak and ponderosa pine/bear clover forest, and meadows in the upper montane are usually bordered by red fir forest.

Montane meadows most commonly can be found on fine-textured, wetland soils, or continuously moist or wet soils; however, some may dry out seasonally. The main growth period is from late spring through summer, but is limited to summer at higher elevations. Meadows remain dormant from fall through early spring and typically are covered by snow for seven months of the year.

Fire Return Intervals for montane meadows vary from one to five years, with the median at two years. FRID are generally low, except for Stoneman Meadow, which has missed more than four intervals.

This vegetation type does not have target conditions described in the FMP; nor is there sufficient monitoring to determine conditions with any confidence.

Fires normally will not spread into wet meadows, although they are common in surrounding forested areas and frequently burn against meadows. Dry meadow fires are largely dependent on fire regimes in surrounding communities and result from American Indian cultural practices.

American Indians frequently burned Yosemite Valley meadows to improve hunting, stimulate certain food plants, and generally clear the undergrowth (Ernst 1961). Low elevation meadows often integrate with the California black oak woodland vegetation type, increasing their importance to American Indians. Both wet and dry meadow subtypes have been influenced by the invasion of nonnative species below about 1,700 m (5,500 feet), and by escaped ornamentals, grazing, and plowing. Above this elevation, the meadows continue to support a largely native flora.

Lower Montane Forest

This zone covers a large portion of the east side of the park (900-1800 m [2,900-5,904 ft.]), extending westward up the Tuolumne canyon and into Yosemite Valley. Within the potential project area, 8,466 acres (3,426 ha) are comprised of this vegetation zone. It is divided into six vegetation types: canyon live oak, California black oak woodland, riparian woodland, ponderosa pine/bear clover forest, white fir/mixed conifer, giant sequoia/mixed conifer forest, and ponderosa pine/mixed conifer. This mid elevation zone is the lowest zone that regularly receives a majority of its precipitation in the form of snow.

Canyon Live Oak

This vegetation type inhabits widely disjunctive areas between 760 and 1,700 m (2,500-5,575 ft.) and covers 21,344 acres (8,638 ha) of the Park and El Portal. Within the potential project area, 357 acres (144 ha) are comprised of this vegetation type. It is transitional between low elevation broadleaved forests and higher elevation coniferous forests, and often forms pure or almost pure stands covering several hundred acres. Large stands occur in the Merced Canyon below Yosemite Valley, on the talus slopes of Yosemite Valley, and upstream of Hetch Hetchy Reservoir. The Yosemite Falls trail is also a typical location.

Dominant species include canyon live oak, incense cedar, and California laurel, with very little understory. It typically is found on rocky, steep slopes with little soil development in canyons on north-facing slopes at relatively low elevations, and on south-facing slopes at higher elevations. Stands are composed of either low, shrublike trees less than 35 feet (10m) on south-facing slopes, or erect forests up to 65 feet (20m) high in moist sites.

Fires in this community are infrequent but intense, and usually do not spread far because talus and cliffs provide discontinuities in the surface fuel bed. In areas subjected to frequent fire, oaks can become shrublike and intergrade with chaparral.

Fire Return Intervals vary from seven to 39 years, with the median at 13 years. FRID for this type is a mix of high and low, with large areas near Hetch Hetchy being low (fewer than four fire cycles missed), but higher areas around Yosemite Valley and Wawona.

This vegetation type does not have target conditions described in the FMP; nor is there sufficient monitoring to determine conditions with any confidence.

California Black Oak Woodland

This vegetation type covers 3,156 acres (1,277 ha) between 1,200 and 2,100 m (3,936-6,888 ft.). It inhabits isolated patches of not more than 200 acres (80 ha), and forms open to dense woodlands. Within the potential project area, 63 acres (25 ha) are comprised of this vegetation type. Yosemite Valley east of lower Yosemite Falls provides a typical example of this vegetation type.

The California black oak (*Quercus kelloggii*) vegetation type can exist as nearly pure stands, or co-dominant with other species. Most stands inhabit mountain slopes, benches, coves, canyon bottoms, lower sidehills, and upper foothill slopes. Associated species include white fir (*Abies concolor*), incense cedar (*Calocedrus decurrens*), sugar pine (*Pinus lambertiana*), ponderosa pine (*Pinus ponderosus*), and canyon live oak (*Quercus chrysollepis*).

Black oaks have an evolutionary adaptation to the presence of fire, but the natural fire regime varies considerably depending on the sites occupied and the surrounding vegetation communities.

Fire Return Intervals vary from two to18 years, averaging eight. FRID is variable, generally low in Yosemite Valley, but high in some areas south of the Valley and west of the Wawona Road.

This vegetation type does not have target conditions described in the FMP; nor is there sufficient monitoring to determine conditions with any confidence.

This vegetation type was an important element in American Indian culture, primarily as a food source, and American Indians frequently used fire to manage and preserve the oak woodlands (Reynolds 1959; Clark 1927; Ernst 1961). Indian burning maintained and perhaps expanded the black oak groves in Yosemite (Heady and Zinke 1978; Gibbens and Heady 1964). These woodlands are also a significant feature of the Yosemite Valley Native American cultural landscape, and are important for acorn production.

The disruption of natural and Native American fire regimes has led to the rapid decline of this vegetation type in the park (Angress 1985). The majority of this community has been engulfed by rapidly encroaching ponderosa pine and incense cedar.

Riparian Woodland

Riparian areas exist throughout the park, but the riparian woodland vegetation type lives in the lower montane forest zone, between 900 and 1800 m (2,952-5,904 ft.). Within the potential project area, 135 acres (55 ha) consist of this vegetation type. Typical riparian woodland areas include portions of the Merced River in Yosemite Valley, downstream from Hetch Hetchy Reservoir, and Pate Valley. Riparian woodlands represent streamside communities in which distribution varies with soil saturation and frequency of disturbance. In Yosemite Valley, riparian woodlands extend outward from the bank edges of the Merced River and its tributaries into adjacent meadow and forest communities.

Riparian woodlands are characterized by broadleaf deciduous trees. Dominant species include white alder (*Alnus rhombifolia*), black cottonwood (*Populus balsamifera*), and red willow (*S. lucida muhlenb.*

spp. *lasiandra*). The deciduous understory is commonly shrubby, consisting of western red dogwood *(Cornus sericea ssp. occidentalis)* and western azalea (*Rhododendron occidentale*).

This vegetation type is not fire dependent. Fires that may occur would enter from adjacent communities that are more flammable. Riparian woodlands remain green with high moisture content throughout the fire season. Flooding is the more common source of disturbance.

Ponderosa Pine/Bear Clover

This vegetation type covers about 114 acres (46 ha). It lives on xeric slopes facing south and west, and on ridgelines between 900 and 1,700 m (2,952-5,576 ft.), except near lower elevational margins. Within the potential project area, 441 acres (178 ha) are comprised of this vegetation type. Wawona is an area typical of this vegetation type.

The ponderosa pine/bear clover vegetation type forms an open, parklike forest, in which bear clover is a very common ground cover. Dominant species include ponderosa pine (*Pinus ponderosa)* and California black oak (*Quercus kelloggii*), with other conifer species present in small numbers. This vegetation type is characterized by a shrub layer of bear clover (*Chamaebatia foliolosa*). It intergrades with blue oak woodland, California black oak woodland, or foothill pine-live oak-chaparral woodland vegetation types at lower elevations.

Fire spread in this vegetation type is faster and more intense than in the ponderosa pine/mixed-conifer forest type. Bear clover forms a carpet averaging 30-46 cm (12-18 in.) high, and has very resinous and flammable foliage that sprouts vigorously after fire.

The Fire Return Interval varies from two to six years, averaging four years. FRID are mixed: Some are high, and some are low.

This vegetation type does not have target conditions described in the FMP, although current conditions are monitored and are described in Appendix I.

Ponderosa Pine/Mixed Conifer

This vegetation type inhabits between 900 and 1,700 m (2,952-5,576 ft.) near the western park boundary. It covers 33,998 acres (13,758 ha). Within the potential project area, 4,563 acres (1,846 ha) are comprised of this vegetation type. The Hodgdon Meadow area and Wawona provide typical examples of this vegetation type.

Ponderosa pine (*Pinus ponderosa)* is the predominant species for this type, with several codominant species including incense cedar (*Calocedrus decurrens*), sugar pine (*Pinus lambertiana*), white fir *Abies concolor*), and California black oak (*Quercus kelloggii*). Understory shrubs include whiteleaf manzanita (*Arctostaphylos viscida*) and whitethorn (*Ceanothus cordulatus*). This vegetation type intergrades with the white fir/mixed-conifer forest at the upper elevations, and with either California black oak woodlands or foothill pine-live oak-chaparral woodlands at the lower elevations.

Ponderosa pine is adapted to fire, in that it has developed a thick, fire-resistant bark that insulates the cambium from heat. Seedlings and saplings are also highly adapted to scorching.

The Fire Return Interval varies from three to 14 years, averaging four years. This type is common along the west side of the park, and has been impacted by fire exclusion, with FRID greater than four cycles over nearly one-half of its range.

This forest type meets FMP target conditions to stem density among larger trees, but data for large tree stem density are not precise enough to determine whether conditions are met. Target conditions for large trees are met, but among smaller trees, fir is strongly overrepresented, while pine is strongly underrepresented. There are insufficient data to determine whether target conditions for fuel loading are being met.

White Fir/ Mixed-Conifer Forest

This vegetation type forms an almost continuous zone of large dense forests over a wide band between 1,700 and 2,300 m (5,576-7,544 ft.) on north-facing slopes. It covers 46,871 acres (18,968 ha) parkwide, and 2,467 acres (998 ha) within the potential project area. The upper Tuolumne Grove Road provides a typical example of this vegetation type

White fir (*Abies concolor*) is the dominant species in this vegetation type, but in many areas there is a constantly changing continuum of tree species abundance. Major representative species include sugar pine (*Pinus lambertiana*), Douglas fir (*Pseudotsuga menziesii*), and incense cedar (*Calocedrus decurrens)*. The understory is typically sparse.

Fire behavior is extremely variable in this vegetation type, but slow spreading surface fires are most typical. The Fire Return Interval varies from three to 35 years, averaging eight years. Many areas of white fir have low FRID, although roughly 1/3 of the vegetation type has missed at least four fire cycles (FRID > 4).

The FMP sets target conditions for this vegetation type that are being met for stem density and species composition among larger trees. Data are not precise enough to say whether this vegetation type meets target conditions for smaller trees; it clearly does meet targets for small tree species composition, with fir and cedar overrepresented and pine underrepresented.

Giant Sequoia/Mixed Conifer Forest

This vegetation type can be found only in the giant sequoia groves – the Mariposa, Merced, and Tuolumne groves, covering 218 acres (88 ha) between 1,600 and 2,000 m (5,248-6,560 ft.). The Mariposa Grove is the largest of these groves and contains about 86% of the giant sequoias in the park. Within the potential project area, 122 acres (49 ha) are comprised of this vegetation type.

This type is dominated by giant sequoia *(Sequoiadendron giganteum)* trees, with an understory of white fir (*Abies concolor*), sugar pine (*Pinus lambertiana*), and incense cedar (*Calocedrus decurrens)*. Due to the high water table and moist microclimate in this vegetation type, the forest floor is frequently covered with herbs and shrubs, especially broadleaf lupine (*Lupinus latifolius*) and little-leaf ceanothus (*Ceanothus parvifolius*).

Natural regeneration of giant sequoia is strongly dependent upon conditions produced by recurring, moderately intense fires (Harvey, Shellhammer, and Stecker 1980). These fires heat the canopy of mature sequoias, causing a sudden release of large numbers of seeds from serotinous cones.

The Fire Return Interval varies from three to 15 years, averaging about 10 years. FIRD are low, as the groves have always been a high priority for management. The Mariposa Grove, Merced Grove, and Tuolumne Grove are typical locations of this community.

The FMP sets target conditions for this vegetation type as described in Appendix I. Current data indicate that the species composition is weighted too heavily with fir and cedar, and not heavily enough with pine and sequoia. Stem density is on target for large trees, but data are not precise enough to say whether it is on target for smaller trees. Fuel loading greatly exceeds target conditions.

Upper Montane Forest

This zone contains the following vegetation types: montane chaparral, western white pine/Jeffrey pine forest, red fir forest, and Sierra juniper forest. It covers large, mid elevation portions of the park, between 1,800 and 2,400 m. Within the potential project area, 1,913 acres (774 ha) are comprised of this vegetation zone. The climate in this zone is characterized by short, cool summers and cold winters. Nearly all precipitation in this zone takes the form of snow. Upper montane forest is a forest-dominated

zone interspersed with biologically diverse meadows. This vegetation zone is not heavily affected by fire exclusion, in part due to high Fire Return Intervals.

Montane Chaparral

This vegetation type covers 15,137 acres (6,126 ha) of the park, in widely disjunct areas throughout the park from 1,200 to 3,300 m (3,936-10,824 ft.) in elevation. It is often found on south-facing slopes, and comprises 258 acres (104 ha) of the potential project area. Crane Flat Lookout and Piute Creek provide typical examples of this vegetation type.

Montane chaparral forms a dense, thick-leaved thicket with typically sparse understories. The primary representative species are greenleaf manzanita (*Arctostaphylos patula*), whitethorn (*Ceanothus cordulatus*), huckleberry oak (*Quercus vaccinifolia*), and, at the lower elevations, bitter cherry (*Prunus emarginata*) and chinquapin (*Chrysolepis sempervirens*). Since the majority of the annual precipitation comes as snow, there is a shorter growing season than in lower elevation chaparral communities. Montane chaparral intergrades with the western white pine/Jeffrey pine forest or red fir forest vegetation types, and is frequently found adjacent to barren areas of exposed rock.

Lightning fires are common and widespread within this community. Fires spread easily into this community from adjacent forested areas where fires are more likely to ignite. Often these fires are so intense that most of the dead fuel and above-ground biomass is removed.

This vegetation type is adapted to fire, in that all of the shrub species possess the ability to sprout vigorously following intense fire. Most montane chaparral stands are shorter than, and do not contain the high percentages of dead wood typical of, senescent, lower elevation chaparral.

Fire Return Intervals vary from 10-75 years, with a median of 12 years. FRID is low, with most areas having missed fewer than three fire cycles.

The FMP sets target conditions for this type (Appendix I), but currently there are insufficient data to determine whether this vegetation type meets those conditions.

Western White Pine/Jeffrey Pine Forest

This vegetation type covers 132,708 acres (53,705 ha) from 1,800 to 2,700 m (5,904-8,856 ft.) in elevation, and inhabits large stands bounded by montane chaparral and red fir forest. Within the potential project area, 642 acres (260 ha) are comprised of this vegetation type. Western white pine is dominant at higher (2,400-3,000 m [7,872-9,840 ft.]) elevations, while Jeffrey pine dominates from 2,400 to 2,700 m. Typical western white pine locations include the south side of Clouds Rest and Buena Vista Crest, where trees tend to be widely spaced with a robust, shrubby understory. Typical Jeffrey pine forest locations include the south-facing slopes below Half Dome and Clouds Rest, and the basin to the southwest of Mount Starr King, where it forms forests of several thousand acres.

Western white pine (*Pinus monticola*) usually exists sporadically or as a codominant in the red fir forest. On a few slopes facing south or west, between 2,400-3,000 m (7,872- 9,840 ft), it forms the dominant forest cover and may even exist in pure stands. This vegetation type generally occupies dry rocky areas and is composed of large, widely spaced trees. Often there is an understory of dwarfed montane chaparral composed of pinemat manzanita (*Arctostaphylos nevadensis*) and mountain whitethorn (*Ceanothus cordulatus*). Jeffrey pine (*Pinus jeffreyi*) favors dry, cold, well-drained sites, especially slopes, ridges, or cold air accumulation basins. It inhabits irregularly shaped and disjunctive patches following the ridges.

Western white pine occupies open rocky terrain that typically hinders the spread of fires, and few have been recorded. Fire behavior is characterized by a fingering type of fire spread.

Jeffrey pine forms one of the most flammable communities at upper elevations within the zone of frequent lightning strikes. Consequently, it has one of the highest lightning fire incidence levels in the park.

Fire return intervals vary from four to 96 years, with the median at 12 years. Forests of this type tend to have missed fewer than four fire cycles (FRID <4), although the FRID for this type does still tend to be higher than for red fir.

This vegetation type does not have target conditions described in the FMP; nor is there sufficient monitoring to determine conditions with any confidence.

Red Fir Forest

This vegetation type is extensive and covers about 68,125 acres (27,569 ha) from 2,000 to 2,700 m (6,560-8,856 ft.), and is dominant at these elevations. Within the potential project area, 1,216 acres (492 ha) are comprised of this vegetation type. It forms a fairly continuous band from north to south, broken only by Yosemite Valley and the Grand Canyon of the Tuolumne. Porcupine Flat and the Lukens Lake trail from Tioga Road contain typical examples of this vegetation type.

Red fir (*Abies magnifica*) lives in the area of greatest snow accumulation in the Sierra Nevada. Snow generally remains until June, and the growing season is concentrated into mid summer. It typically grows to approximately 60 m (197 ft.) tall in pure, dense stands on coarse, well-drained, but moist soils. These dense forests, with frequently overlapping narrow crowns, cast deep shade on the forest floor. The understory is nearly absent, and ground cover consists of abundant needle litter and fallen branches. At the lower edge of its habitat red fir grades into white fir/mixed-conifer forest, while at the upper edge it grades into the lodgepole pine forest. Common associates include white fir (*Abies concolor*), western white pine (*Pinus monticola*), and, at the upper limit, lodgepole pine (*Pinus contorta*).

Red fir regenerates well in the absence of fire; however, fires do play an important role in the successional relationship between red fir and lodgepole pine. In the absence of periodic fire, successional shifts in favor of more shade-tolerant red fir have been observed, even on some mesic sites. Fire is also important in defining and maintaining the ecotone between red fir and Jeffrey pine (*Pinus jeffreyi*) or montane chaparral. Frequent fire favors the expansion of the chaparral and Jeffrey pine at the expense of red fir. Many of the large fires that burn in red fir originate along the ridges dominated by chaparral and Jeffrey pine, where fuels are drier, more exposed to wind, and much more flammable than in nearby red fir areas.

Lightning strikes and resulting fires are frequent in this community. Most fires involve only a single tree, or burn an area of less than two and one-half acres (1 ha) by smoldering in the thick duff. Often, however, slow spreading fires of over 200 acres burn in this community.

Fire Return Intervals for this type vary from nine to 92 years, with a median of 30 years. FRID is generally low.

Red fir forest types meet FMP target conditions for larger tree stem density and species composition among both large and small trees. Data are insufficient to determine conditions for other FMP criteria.

Sierra Juniper

This vegetation type covers about 8,928 acres (3,613 ha), 1,800-2,700 m (5,904-8,856 ft.), and is dominant at these elevations. Within the potential project area, 20 acres (8 ha) are comprised of this vegetation type. Mountain juniper *(Juniperus occidentalis* var. *australis)* can be found as widely spaced trees along rocky canyon sides and ridges. Piute Creek and LeConte Point provide typical examples of this vegetation type.

The trees are never dense enough to be called a forest, growing as they do on a substrate of open

granitic slabs and in fractured granite where some soil has developed. Sometimes western juniper is accompanied by an understory of montane chaparral or sagebrush *(Artemisia tridentata* or *A. rothrockii)*. It rarely coexists with pinon pine *(Pinus monophylla)*. This community covers approximately 9,065 acres (3,669 ha).

Lightning fires are rare in this community and usually involve a single tree. The open woodland is not dense enough to carry fire, and it usually does not generate enough fuel to carry fire between trees. Fire Return Intervals for this type vary.

Data are insufficient to determine conditions for other FMP criteria.

Subalpine Meadows

Subalpine meadows can be found between 2,600 and 3,300 m (8,528-10,824 ft.) in elevation. Within the potential project area, 312 acres (126 ha) are comprised of this vegetation type. Meadows vary in size from one acre (0.4 ha) or less to 700 acres (300 ha). Subalpine and alpine meadows are subdivided into wet and dry types, with characteristic species including grasses, sedges, and perennial herbaceous dicots. Both wet and dry subtypes may coexist in the same meadow. Tuolumne Meadows, Parker Pass Creek, Gaylor Lakes Basin, and upper Rafferty Creek provide typical examples of this vegetation type.

Depending on hydrologic regime, characteristic species include sedges (*Carex* spp.), tufted hair grass (*Deschampsia cespitosa*), Brewer's reed grass (*Calamagrostis breweri*), shorthair sedge (*Carex filifolia* var. *erostrata*), King's ricegrass (*Ptilagrostis kingii*), mountain timothy (*Phleum alpinum*), and groundsel (*Senecio triangularis*). These meadows are present on fine-textured, more or less permanently moist or wet soils. The growing season is limited by moisture, snow, and cold temperatures. Wet meadows remain saturated throughout the growing season, which is limited by snow in the spring and early summer. Dry meadow vegetation may form around a wet meadow. Subalpine meadows are usually surrounded by the lodgepole pine forest or the whitebark pine forests.

Lightning strikes are extremely frequent at these elevations, and lightning fire incidence is moderate in adjacent forested communities. Fires generally do not spread into subalpine meadow communities for two reasons: 1) On the mesic sites the dense herbaceous growth remains green until the end of the fire season, and live fuel moisture remains too high to support fire; 2) On the xeric sites vegetative cover is too sparse to carry fire to any extent, even after the herbaceous plants have cured late in the fire season. Fire does not play an important role in the ecology of this vegetation type.

Subalpine Forests

This zone extends from 2,070 m (6790 ft.) up to tree line and covers 35% of the park. Fire cycles here are relatively long, and this zone has not been strongly affected by fire exclusion. Within the potential project area, 1,801 acres (728 ha) are comprised of this vegetation zone. The subalpine forest zone is made up of two vegetation types: whitebark pine/mountain hemlock, and lodgepole pine. This zone encompasses 297,000 acres in the park, and has a shorter growing season due to the long, cold, snowy winters. This zone typically accumulates between one and three meters of snow during the winter.

Lodgepole Pine Forest

This vegetation type covers 175,516 acres (71,029 ha) of the park, which makes it the most common vegetation type, extending across a wide range of soils and conditions. It generally can be found at elevations with long, snowy winters, late-season snowpack, and cool, dry summers. It is nearly continuous between 2,000 and 3,100 m (6,560-10,168 ft.), and tends to form long, narrow, disjunctive corridors along valley bottoms and cold air drainages at lower elevations. Within the potential project

area, 1,751 acres (709 ha) are comprised of this vegetation type. The Cathedral Lakes trail and Yosemite Creek areas provide typical examples of this vegetation type

Yosemite contains several phases of lodgepole pine (*Pinus contorta* ssp. *murryana*), as it apparently tolerates large variations in soil and moisture. It most commonly lives in rocky, well-drained soils, and often grows in dense, pure, or almost pure stands, composed of trees up to 40 m tall. At its lower limit, lodgepole is found in valley bottoms, cold basins, and wet areas around meadows surrounded by the upper montane forest, such as in Bridalveil Creek Basin. At its upper elevational limits, it forms an open to moderately dense forest up to 20 m (6.56 m) tall on seemingly dry sites in the subalpine zone. Lodgepole may form krummholz at timberline, occupying dry, exposed sites.

Lightning fires are frequent in lodgepole pine, but usually remain very low intensity surface fires, often smoldering in the thin, densely matted duff. Localized crown fires have occurred infrequently. This type of fire behavior has so far been observed only near the lower end of lodgepole pine range, especially in valley bottoms and along the ecotone with other communities. Lodgepole pine cones open rapidly following crown fires and quickly fall from the trees in great numbers. These areas have all succeeded to dense lodgepole thickets.

Fire Return Intervals vary from four to 163 years, with a median of 102 years. FRID is low throughout this vegetation type, as the long fire cycle is less impacted by fire exclusion.

This vegetation type does not have target conditions described in the FMP; nor is there sufficient monitoring to determine conditions with any confidence.

Whitebark Pine/Mountain Hemlock

This vegetation type covers 87,582 acres (35,443 ha) of park land, from 2,900 to 3,300 m (9,512-10,824 ft.) elevation. Within the potential project area, 46 acres (19 ha) are comprised of this vegetation type. The west side of Mount Dana provides a typical example of this vegetation type.

Whitebark pine and lodgepole pine dominate on cold, stony sites with poorly developed, nutrient-poor soils, among rocky ridges and outcrops. Clusters of trees grow in soil accumulations at timberline, in open or clumped forests, to approximately 20 m (66 ft.) tall. Understory shrubs are low and sparse. This community intergrades on better sites, or at elevations below 2,400 m (7,872 ft.), with Jeffrey pine forest, red fir forest, and lodgepole pine forest vegetation types.

Fire behavior in this community is typical of the whitebark pine forest community.

Fire Return Intervals vary from four to 508 years, with a median of 187 years. FRiD is low throughout this vegetation type.

This vegetation type does not have target conditions described in the FMP; nor is there sufficient monitoring to determine conditions with any confidence.

Urban/Developed

Within the potential project area, 58 acres (23 ha) are comprised of this classification type. Types with this zone include cultivated areas, such as golf courses and lawns, and orchards (most of which are in Yosemite Valley and Wawona).

Barren

Within the potential project area, 116 acres (47 ha) are comprised of this classification type. Types of landscape with this zone include rock (barren rock, domes, and talus) and sparsely vegetated areas.

Within the potential project area, 22 acres (9 ha) are comprised of this classification type.

Appendix C Cumulative Projects List

The following past, present, and reasonably foreseeable projects were considered in the cumulative effects analysis document in Chapter III.

Reasonably Foreseeable Actions or Plans

Agency Name: Various
Project Name: Population growth in California

Description: California is the most populous state in the country, and the state continues to add more people than almost any other. Population trends in the gateway communities stand in contrast to those of the state, with most of the gateway population trends being flat (or nearly so). Overall, however, the strong population growth statewide (over three-fourths of Yosemite's visitors live in-state) can lead to more demand for visitor services in the state, as well as more information on air quality impacts.

Current Actions or Plans

Agency Name: National Park Service, Yosemite National Park
Project Name: Merced Wild and Scenic River Comprehensive Management Plan

Description: The NPS has begun developing a new comprehensive management plan and associated environmental impact statement for the Merced Wild and Scenic River (Merced River Plan/EIS). In this plan, the agency will address resource protection and restoration; development (and/or removal) of lands and facilities; user capacities; and specific management measures that will be used to protect and enhance the river's outstandingly remarkable values. The Merced River Plan/EIS will address the quantity and mixture of recreation and other public uses that may be permitted without adverse impact on the river's outstandingly remarkable values, including a discussion of the maximum number of people that may be received in the river corridor. The plan/EIS will also include site-specific planning for Yosemite Valley, El Portal, and Wawona, along with an analysis of parkwide transportation solutions.

Scheduled/projected completion: 2012

Agency Name: National Park Service, Yosemite National Park
Project Name: Tuolumne Wild and Scenic River Comprehensive Management Plan

Description: The NPS is preparing a comprehensive management plan for the segments of the Tuolumne River corridor within Yosemite National Park. When completed, this document will guide the future management of the river to ensure the protection and enhancement of the river's Outstandingly Remarkable Values and its free-flowing condition. The plan will also determine more specifically the programs and activities needed to meet river protection goals in Tuolumne Meadows and throughout the river corridor.

To achieve these objectives, the Tuolumne River plan will:

- review, and if necessary revise, the existing boundaries and segment classifications of the Wild and Scenic River corridor;

- establish management zoning in the river corridor to provide for a spectrum of interrelated resource conditions and visitor experiences;
- establish clearly stated long-term goals (desired conditions) for resource protection and visitor experiences, and identify the indicators and standards for a monitoring program that will ensure these goals are met and maintained over time;
- address user capacity by identifying the appropriate kinds and levels of use that protect river values while achieving and maintaining the desired conditions; and
- identify specific programs and facilities needed to implement the long-term goals for the Tuolumne Meadows area established by the Tuolumne River plan.

The Tuolumne is rich in what the Wild and Scenic Rivers Act calls outstandingly remarkable values. It is home to a vast range of ecologic and sociocultural values, including:

- intact ecosystems providing habitat for a remarkable diversity of species;
- some of the most extensive subalpine meadow and riparian communities in the Sierra Nevada;
- exceptionally well preserved evidence of glacial processes;
- regionally significant archeological evidence of prehistoric travel, trade, and settlement;
- Prehistoric resources important for maintaining cultural traditions of American Indian people;
- Magnificent scenery;
- Outstanding opportunities for a diversity of recreational experiences; and
- Invaluable opportunities to examine natural and cultural resources with high research value.

The draft plan is to be completed by 2010.

Agency Name: U.S. Forest Service, all California national forests
Project Name: Inyo National Forest Travel Management Plan and Forest Plan Revision

Description: The U.S. Forest Service will be developing travel management plans and forest plans for all national forests in California over the next few years. Travel management plans specify which forms of travel are allowed in which areas of the national forests. Forest plans guide where and under what conditions an activity or project on national forest lands can generally proceed. Some of the forests have completed one or both of these tasks

Scheduled/projected completion: mid-2010s.

Agency Name: National Park Service, Yosemite National Park
Project Name: Tenaya Lake Plan

Description: Tenaya Lake is a magnificent High Sierra lake surrounded by granite domes, lodgepole forests, and Yosemite's vast wilderness. It is the largest lake in Yosemite's frontcountry. Because of its remarkable scenic qualities, its inviting blue water, and its proximity to Tioga Road, Tenaya Lake is one of the most popular destinations for summer visitors in Yosemite. Problems associated with visitor use, visitor safety, and resource impacts have been present for decades. Thanks to a generous grant from The Yosemite Fund, the NPS has begun a comprehensive analysis of, and creation of a solution to, these issues. The “Tenaya Lake Plan Environmental Assessment” will provide for a formal, public analysis of these longstanding issues and will provide a plan to remedy these issues. After the plan is completed, the park will continue with design development and implementation of the solutions identified in the plan. These solutions may include ecological restoration, construction of a low impact campground, picnic area improvements, trailhead and parking improvements, comfort stations, and trails.

Scheduled/projected completion: 2011

Agency Name: National Park Service, Yosemite National Park
Project Name: Tioga Trailheads Project

Description: The Tioga Pass Road provides access to many High Sierra trailheads. Some of the trailheads lack designated parking, requiring backcountry users to park their vehicles on roadsides. Dozens, sometimes hundreds, of vehicles can be parked alongside the road in this manner in July and August, leading to congestion and detracting from scenic views for other park users. This project would improve circulation, accessibility, parking, viewing, food storage, way finding, and interpretive opportunities along the Tioga Road corridor. Eight trailheads along the Tioga Road corridor would be addressed: Gaylor Lakes at Tioga Pass, Mono Pass, Snow Creek, May Lake, Porcupine, Yosemite Creek/Ten Lakes, Lukens Lake, and Tamarack Flat/Aspen Valley. Eventual solutions could include defining parking areas, improving comfort stations, adding shuttle bus stops, installing interpretive and way-finding signs, and ecological restoration.

Scheduled/projected completion: 2011.

Agency Name: National Park Service, Yosemite and Sequoia/Kings Canyon National Parks
Project Name: Tioga Road and Generals Highway Rehabilitations

Description: The Tioga Road rehabilitation project in Yosemite will rehabilitate and resurface 38 miles of the Tioga Road from Crane Flat to the Tuolumne Meadows campground. The existing 22-foot-wide paved road, as well as paved ditches that are two to six feet wide at various locations, will be recycled and overlaid with spot reconstruction of subgrade and shoulders as required. Adjacent parking areas and turnouts will also be rehabilitated and resurfaced as necessary. Informal pullouts will be evaluated for rehabilitation. All headwalls and other associated stonework and deteriorating curbs will be evaluated and repaired as necessary. Selective clearing is planned throughout the 38-mile corridor to help improve sight distance, drainage, snow removal, and safety. Deteriorating curbs will be evaluated for repair and/or replacement. Areas disturbed by construction will be revegetated.
On the Generals Highway linking Sequoia and Kings Canyon National Parks, the NPS recently performed a similar project on two portions (totaling about 11 miles) of the highway.

Scheduled/projected completion: The Tioga Pass project will be implemented in three phases and is scheduled to start in 2012 and end in 2018, each section being completed in two-year increments.

Agency Name: National Park Service, Yosemite National Park
Project Name: Yosemite Institute Environmental Education Campus

Description: The Yosemite Institute, an NPS nonprofit park partner, has provided environmental education programs in Yosemite National Park since 1971 at the NPS facility at Crane Flat. Most of the campus structures and utilities are more than 60 years old, energy inefficient, and difficult to retrofit to achieve modern standards for health, safety, and accessibility. In addition, the facility can accommodate only a fraction of the students in the program; the remainder must be based elsewhere in the park, in expensive commercial lodging. To address these issues, the Yosemite Institute and the NPS are considering options to provide better facilities by redeveloping the existing campus (Crane Flat) or constructing a new education center at a different location (and restoring the Crane Flat campus to natural conditions). The draft environmental impact statement (EIS), released in May 2009, proposes to develop a new educational facility at Henness Ridge, near Yosemite West, and to restore Crane Flat to natural conditions and provide habitat for sensitive species.

Scheduled/projected completion: The Record of Decision was signed by the Regional Director on April 2, 2010.

Agency Name: National Park Service, Yosemite National Parks
Project Name: Improve Communication Data Network

Description: Yosemite will soon be upgrading its Communications Data Network infrastructure to fulfill the park's future operational and security needs while maximizing existing equipment use and minimizing current and planned costs. The park intends to link El Portal, Yosemite Valley, Wawona, Crane Flat/Hodgdon Meadows, Tuolumne Meadows, and Hetch Hetchy with multiple T-3 level bandwidth.

Scheduled/projected completion: The Finding of No Significant Imapct (FONSI) was signed by the Regional Director on May 11, 2010.

Agency Name: National Park Service, Yosemite National Parks
Project Name: High Elevation Aquatic Ecosystem Recovery & Stewardship Plan

Description: The NPS is preparing a "High-Elevation Aquatic Resources Management Plan" to guide management actions to protect Yosemite's diverse high-elevation aquatic ecosystems and to restore natural composition, structure, and function to systems that have been disturbed by past or ongoing human activities. The plan is needed to provide a framework for restoring and maintaining high elevation aquatic ecosystems in the park; to halt the decline of native amphibian populations and to restore species within their natural range; and to prepare for new challenges that may threaten these systems. The plan will include the lakes, ponds, wet meadows, and streams located above 6,000 feet in elevation, and the diverse plants and animals that inhabit these environments. The plan will consider:

- the removal of nonnative fish from targeted areas of the park to restore natural biodiversity in critical basins (chemical removal of nonnative fish is not currently being considered in this plan);
- the restoration of Sierra Nevada yellow-legged frogs and Yosemite toads to suitable locations within their historic range; and
- the development of best management practices for recreational and administrative use of high elevation aquatic ecosystems to ensure that park resources and values remain unimpaired.

Note that the National Park Service is drafting a similar plan for Sequoia and Kings Canyon national parks in the southern Sierra.

Scheduled/projected completion: 2011

Agency Name: National Park Service, Yosemite National Park
Project Name: Commercial Use Authorizations for Commercial Activities

Description: The purpose for the issuance of these commercial use authorizations (CUA, previously titled Incidental Business Permit) is to regulate and oversee operations of permit holders involved in conducting commercially guided day hiking, overnight backpacking, fishing, photography workshops, stock use (pack animal trips and pack support trips for hikers), and Nordic skiing activities in Yosemite National Park. In addition to the base CUA, additional uses and activities may be allowed depending on the holder's request and compliance with all applicable laws, regulations, and guidelines. Conditions for these additional activities are stipulated in the body of the individual permit for each activity. The permitted activities are to be conducted only in those areas of Yosemite National Park open to the public and authorized by the permit. The permit holder is required to obtain any additional permits or licenses as required by law.

Scheduled/projected completion: Permits are renewed annually.

Agency Name: National Park Service, Yosemite National Park
Project Name: Capital Improvement Fund, Curry Village Rockfall Hazard Zone Structures Project

Description: The NPS is developing an environmental assessment to address the structures in the Curry Village rockfall hazard zone. The purpose of this project is to:

- mitigate inherent safety risks associated with unauthorized visitor access to the closed rockfall hazard zone;
- minimize the potential for further loss of historically significant structures and/or features that contribute to the Curry Village Historic District; and
- identify appropriate mitigation to resolve the potential adverse effect on the Curry Village Historic District.

Although the greater Curry Village area will be addressed as part of the "Merced Wild and Scenic River Comprehensive Management Plan" currently under development, the hazards associated with the existing structures in the rockfall hazard zone need to be addressed in the near term. The actions taken under this project will not influence decisions to be made about user capacity and protection of the river's outstandingly remarkable values in the Merced River planning process. However, if alternatives or ideas arise that are beyond the scope of this project, they will be used to inform the Merced River plan.

Scheduled/projected completion: The plan should be completed in 2010.

Agency Name: National Park Service, Yosemite National Park
Project Name: Capital Improvement Fund, The Ahwahnee Comprehensive Rehabilitation Plan

The purpose of this project is to develop a comprehensive plan for phased, long-term rehabilitation of The Ahwahnee National Historic Landmark hotel and associated guest cottages, employee dormitory, and landscaped grounds in order to:

- restore, preserve, and protect the historic integrity and character-defining features of The Ahwahnee by rehabilitating aged or altered historic finishes and contributing landscape features;
- enhance visitor and employee safety by bringing the buildings and grounds into compliance with current building, fire, life safety, and seismic standards;
- improve hotel energy efficiency and operations by repairing or replacing outdated or inefficient building systems and components; and
- protect and enhance the visitor experience at The Ahwahnee through improved operational efficiency, increased accessibility, and rehabilitation of historic resources.

After more than 80 years in service, the hotel and associated structures are in need of rehabilitation because the facilities at The Ahwahnee are not fully compliant with the most recent building and accessibility codes, including International Building Code (IBC), National Fire Protection Association (NFPA) Code, Federal Emergency Management Agency (FEMA), IBC seismic requirements, and Americans with Disabilities Act (ADA) standards.

Many of the electrical, plumbing, and mechanical systems serving The Ahwahnee facilities are aging and need to be replaced and updated. Some historic hotel finishes and landscape components are timeworn or have been altered over the years, potentially affecting the historic integrity of this property. The current operational layout of some working areas reduces the efficiency of providing a high level of visitor services.

The architectural team is currently evaluating the operational needs and code compliance needs of The Ahwahnee. These needs, along with recommendations from recent cultural landscape and historic structures reports, detailed seismic studies, and issues and concerns identified during public scoping,

will inform the development of alternatives for this project. The *Scenic Vista Management Plan* has identified several vistas at the Ahwahnee that will be considered for management.

Scheduled/projected completion: Alternatives are expected to be identified in summer 2010.

Agency Name: U.S. Forest Service, Sierra, Stanislaus, Inyo, and Humboldt-Toiyabe National Forests
Project Name: Motorized Travel Management Plans

Description: All of these national forests released draft motorized travel management plans or travel management plans between 2007 and 2009. Travel management plans specify which forms of travel are allowed in which areas of the national forests. The Sierra National Forest's preferred alternative would prohibit motor vehicle travel off designated National Forest Transportation System (NFTS) roads, trails, and areas by the public, except as allowed by permit or other authorization; add 40 miles of existing unauthorized routes (with proposed season of use) to the current system of NFTS trails and six miles to the current system of NFTS roads, and permanently convert 91 miles of NFTS roads to NFTS trails; add one area, totaling six acres, where use of motor vehicles by the public would be allowed anywhere within that area; and allow nonhighway legal vehicle use on approximately 91 miles of existing NFTS roads where such use is currently prohibited, and prohibit all vehicle use on 204 miles of existing NFTS roads.

The Stanislaus's preferred alternative would prohibit motor vehicle travel off designated NFTS roads and trails by the public except as allowed by permit or other authorization (excluding snowmobile use); add 157 miles of existing unauthorized routes to the NFTS of trails currently open to the public for motor vehicle use; and make vehicle class changes to the existing NFTS on 623 miles of roads.

The Inyo's preferred alternative, which is complete, restricts public motorized use to designated NFTS roads, trails, and areas. It adds to the system 850 miles of high-clearance native surface roads as high-clearance roads open to all vehicles, 122 miles of motorized trails open to all trail vehicles, 20 miles of ATV trails, and 15 miles of motorcycle trails.

The Humboldt-Toiyabe's travel management plan concerns, for purposes of this analysis, only the Bridgeport Ranger District on Yosemite's northeast side (the Humboldt-Toiyabe National Forest stretches across eastern California and the entire state of Nevada). The preferred alternative, released in summer 2009, would restrict motorized use to designated routes except for one 85-acre area, and would add 210 miles of existing unauthorized routes to the NFTS.

Scheduled/projected completion: 2010

Agency Name: U.S. Forest Service, Sierra, Stanislaus, and Inyo National Forests
Project Name: Recreational Facility Analysis

Description: In 2007, the USFS completed an analysis of its public recreation sites. The analysis examined existing demand for the recreational resources, the need to update or change the sites to meet the demand (including closing some sites that no longer have demand), and the agency's ability to make the recommended changes. The analysis concluded with a program of work to reduce the deferred maintenance on the sites by 20% in the ensuing five years. The work will include everything from improvements at some sites to closure of others.

Scheduled/projected completion: This project is ongoing.

Agency Name: U.S. Forest Service, Sierra and Stanislaus National Forests
Project Name: Fuels reductions/forest rehabilitation projects

Description: The Sierra and Stanislaus national forests are both conducting a variety of projects aimed at reducing fuels and/or restoring more natural conditions in their west-slope Sierra forests. These

projects have two primary purposes: to reduce the intensity and spread of wildfires across the landscape and near communities, and to reduce stand density within the lower and mid canopy layers of conifer stands to such a level as to provide for increased stand resiliency, growth, and vigor. To accomplish these goals, workers in the forests thin conifer stands to reduce stand densities and ladder fuels; masticate ladder fuels and brush/shrub patches; utilize prescribed burning, understory and pile; manually treat and/or prescribed burn noxious weed infestations; and site prepare and plant failed conifer plantations.

Areas where such work is being conducted include:

- the Dinkey North and South areas about 30 miles northeast of Fresno, California;
- the High Sierra Ranger District (specifically, creating a fuel break);
- the Kings River drainage south of Yosemite;
- the Highway 4 corridor from Poison Spring to Spicer Road;
- the Calaveras Ranger District, Northeast of Dorrington, near Prather Meadows and Big Rattlesnake Creek;
- the Middle Fork Tuolumne River area;
- Greeley Hill and Wagner Ridge;
- the Twomile planning area, located within the Clavey River watershed, encompassing portions of Hull Creek, Twomile Creek, and the Clavey River;
- the Pacific Southwest Research Station;
- Fence Creek Road (6N06) and Wagner Cabin Tract; and
- Gooseberry Forest and Meadow, north of Bell Meadow and west of Gianelli Trailhead.

Scheduled/projected completion: Some form of fuel reduction/forest restoration is ongoing at all times in the west-slope Sierra national forests.

Agency Name: California Air Resources Board
Project Name: Air Quality Monitoring and Air Pollution

Description: Human activities (such as suburban growth, industry, transportation, and farming and ranching) in the San Joaquin Valley, San Francisco Bay area, and Sierra foothills create air quality impacts that occasionally violate federal standards, particularly for ozone and for particulates. Some of these pollutants disperse into the Yosemite area, affecting the park's air quality and visibility. Yosemite is a Class 1 airshed according to the Clean Air Act, conferring additional protections upon the park (requiring cleaner air). Unfortunately, due to the long-distance transport of regional pollutants, the park has recorded between four and 24 exceedances of federal air quality standards for ozone annually for the last 10 years (a median of six exceedances). Additionally, the park suffers visibility degradation, especially on summer afternoons, due partly to particulate generation (the small portion of Yosemite within Madera County is a nonattainment area for particulates). While the California Air Resources Board has implemented some strict air pollution controls (such as the smog checks done biannually on all vehicles licensed for operation in the state) and seen associated improvements in air quality, impacts on the park's air quality and visibility continue. These impacts are expected to continue for the foreseeable future.

Scheduled/projected completion: This project is ongoing.

Agency Name: U.S. Government/U.S. EPA/U.S. Fish and Wildlife Service
Project Name: Climate Change/Petition to list the pika as a threatened species

Description: It is now the accepted understanding in the scientific community that climate change (global warming) is presently occurring and that human activities are causing a substantial portion of such warming. In Yosemite, climatologists have noticed earlier snowpack melting in spring, higher

spring temperatures, more precipitation falling as rain (instead of snow), dryer spring seasons, earlier green-up times, a three-degree increase in nighttime low temperatures, a 50% reduction in the size of Lyell Glacier, and increased mortality among conifers — all changes that are attributable at least in part to human activity.

Comparing contemporary small mammal ranges in Yosemite with those observed by Joseph Bird Grinnell in the early 20th century, biologists have determined that of the 28 small mammals observed in his studies, half had expanded their range upward by more than 500 meters (1,600 feet). The pika, a member of the rabbit family that tends to live at higher elevations, exemplifies this trend. The small animal is adapted to life at or above timberline, gathering and drying tundra grasses and forbs for winter use and possessing (for the rabbit family) small ears to minimize heat loss. Its high range means that if the animal responds to a warming climate by moving upslope, it may eventually run out of room to range. If climate change continues unabated and the pika's response to move upslope continues, it appears that there will be no higher elevations for the mammal to occupy. For this reason (and pursuant to a lawsuit from a conservation group against the USFWS), the animal is now a candidate for listing as a threatened species pursuant to the Endangered Species Act. At least two other species of small mammals, a chipmunk and a woodrat, have seen dramatic shrinkage in the overall size of their ranges, and are now extremely rare in Yosemite.

Scheduled/projected completion: This project is ongoing.

Agency: Mariposa County
Project Name: Mariposa County General Plan Housing Element Update

Description: Mariposa County is updating the Housing Element of its County General Plan. The Housing Element Update does not provide approval for any specific projects (no ground disturbance would result directly from this plan), but rather provides broad guidance to meet the California State legislature's intent of providing for the availability of housing, expanding housing opportunities, and accommodating the housing needs of all economic segments and income groups in the county.

Scheduled/projected completion: 2010.

Agency Name: National Park Service, Yosemite National Park
Project Name: Parkwide Invasive Plant Management Plan Update

The purpose of this plan is to provide park resource managers with the necessary planning tools and procedures for effectively and efficiently managing nonnative invasive plants. The primary goal is to create a plan that is adaptive, that allows managers to adapt to changing conditions and needs. A methodology will also be created for assessing the efficacy and impacts of new herbicides, and assessing various management guidelines and tools.

Scheduled/projected completion: Preparation of the Environmental Assessment is currently underway, with public review scheduled for fall of 2010.

Agency Name: National Park Service, Yosemite National Park
Project Name: General Ecological Restoration

Yosemite National Park undertakes actions for ecological restoration as independent actions or as part of a larger plan on an ongoing basis. These actions involve a varying degree of compliance. Many of these projects are not major actions in themselves, but these actions collectively are considered in the analysis of this plan. Past examples of these efforts are listed below.

- Cascades Diversion Dam Removal
- Cook's Meadow Ecological Restoration
- Happy Isles Dam Removal
- Happy Isles Fen Habitat Restoration Project

- Happy Isles Gauging Station Bridge Removal
- Merced River Ecological Restoration at Eagle Creek Project

Scheduled/projected completion: These actions are ongoing.

Agency Name: National Park Service, Yosemite National Park
Project Name: Glacier Point Road Rehabilitation

Rehabilitation of the Glacier Point roadway will repair and resurface existing roadway pavement and drainage facilities. Pavement rehabilitation will involve some sort of in-place recycling of the existing deteriorated pavement, followed by the placement of new asphalt paving. All drainage culverts will be examined for condition, capacity, and proper location. Culverts found to be in poor condition, undersized, and/or poorly located will be replaced in improved locations with properly sized pipes. As necessary, the drainage channels to and downstream of existing culverts will be examined for potential improvements. Existing stone masonry at culvert headwalls and outlets will be salvaged and reused. The proposed pavement rehabilitation work can be accomplished within the existing disturbed road corridor. However, culvert relocation or rehabilitation and the improvement of drainage channels to existing culverts will require disturbance of some new areas.

Scheduled/projected completion: 2016.

Agency Name: National Park Service, Yosemite National Park
Project Name: General Management Plan

Description: This plan, completed in 1980, provides the overall framework for managing Yosemite National Park. The plan outlines five broad goals for Yosemite:

1) To restore and maintain natural terrestrial, aquatic, and atmospheric ecosystems so they may operate essentially unimpaired;
2) To preserve, protect, and reestablish scenic resources;
3) To preserve, reestablish, or protect significant cultural resources (historic and prehistoric);
4) To assist all people in understanding, enjoying, and contributing to the preservation of the natural, cultural, and scenic resources; and
5) To maintain a safe, functional, and orderly environment that provides compatible opportunities for resource preservation and enjoyment by visitors and employees.

The "Tuolumne Wild and Scenic River Comprehensive Management Plan" will amend the *General Management Plan* as needed.

Agency Name: National Park Service, Yosemite National Park
Project Name: Fire Management Plan

Description: All major forest and chaparral vegetation communities in Yosemite have evolved under the influence of periodic fires, and many plants have developed adaptations to a regime of frequently occurring fires. Some plants are dependent upon fire for successful reproduction. Unfortunately, decades of fire suppression have altered park vegetation and wildlife habitat. The restoration of fire to its natural role in park ecosystems is one of the highest natural resource management priorities of Yosemite National Park.

The *Final Fire Management Plan/Environmental Impact Statement* (Fire Plan), completed in 2004, directs NPS wildland fire policies in Yosemite National Park. Under the Fire Plan, Yosemite's fire management program employs a variety of activities to accomplish land and resource management objectives and to reduce the risk of unwanted fire in and adjacent to the park. Depending on the area needing attention, the park uses different treatments to manage fire and reduce the decades of accumulation of burnable vegetation and woody debris (dead and dry wood, leaves, duff). Treatments include allowing lightning-

caused fires to burn, setting prescribed fires under carefully controlled conditions, mechanically removing accumulated duff and other fuels, and/or suppressing unwanted fires.

Agency Name: National Park Service, Yosemite National Park
Project Name: Parkwide Invasive Plant Management Plan for Yosemite National Park

Description: There are currently over 150 nonnative plant species in Yosemite National Park. Of these, 28 species are listed for control by the U.S. Department of Agriculture, California Department of Food and Agriculture, or California Exotic Pest Plant Council. Under this plan (approved in September 2008), an extensive program staffed by park employees and supervised volunteers will employ an integrated pest management approach to detect, control, and prevent invasive plants of high and medium-high priority from spreading into uninfested areas. Treatment methods are primarily manual and mechanical, including hand pulling and lopping or cutting using nonmotorized equipment such as shovels and hand-held motorized equipment such as brush cutters or hedge trimmers. Two herbicides – glyphosate and aminopyralid – will be used as necessary to control the highest priority invasive plant populations when the park cannot meet management objectives using other methods. The herbicides prescribed are expected to remain effective during this time. Species targeted for control include velvet grass, bull thistle, mullein, yellow star thistle, spotted knapweed, perennial pepperweed, purple vetch, rose and burr clovers, Himalayan blackberry, white and yellow sweet clover, nonnative wildflowers, and escaped landscaping plants such as foxglove, ox-eye daisy, pink mullein, French broom, tree-of-heaven, and black locust.

Agency Name: National Park Service, Yosemite National Park
Project Name: Vegetation Management Plan, Yosemite National Park

Description: The *Vegetation Management Plan* is an addendum to the *Yosemite National Park Resource Management Plan* (RMP) (NPS 1993) and is guided by the 1980 *General Management Plan* (NPS 1980). The purpose of the plan is to:

- delineate the legislative and administrative requirements that guide development of vegetation management objectives;
- refine the goals and objectives for vegetation management that are established in the RMP;
- describe the dynamic environment of vegetation within the park and the social, cultural, and natural processes that influence the vegetation;
- discuss the current vegetation management issues, and define management objectives, management techniques and strategies for achieving objectives, as well as information needed; and
- provide a summary of vegetation management planning needs to be addressed in the future, including the roles and responsibilities for planning and implementation.

The framework of the plan provides guidance for specific implementation plans to be developed for vegetation management in Yosemite.

Agency Name: National Park Service, Sequoia/Kings Canyon National Parks
Project Name: General Management Plan

Description: In 2007, the NPS completed a new *General Management Plan* for Sequoia and Kings Canyon national parks, in the southern Sierra. The plan is a conceptual plan for the park's next 20 years, including a comprehensive river management plan for the Kings and Kern Wild and Scenic rivers. The plan:

- affirms the protection of park resources while accommodating both day and overnight use;
- zones the wilderness portions of the park according to their levels of use;
- refines the visitor carrying capacity framework and addresses user capacity throughout the park;

- calls for park facilities to become more sustainable over time; and
- restricts stock use of meadows to times when soil moisture levels prevent trampling.

Agency Name: U.S. Forest Service, all national forests in the Yosemite area
Project Name: Grazing Allotment Permit Renewals

Description: When grazing allotments on the national forests are close to expiration, the agency examines the environmental impacts of continued grazing allotment by allotment. Based on this examination, the agency will then adjust allotments as needed. For example, the Inyo recently closed an area to continued cattle grazing to protect bighorn sheep populations. Another management change the agency may require is for the permittee to construct fencing along creeks or around riparian areas to protect such sensitive areas from being trampled by cattle.

Recently Completed Actions or Plans

Agency Name: National Park Service, Yosemite National Park
Project Name: Restoration of Disturbed Areas at Tuolumne Meadows Lodge

Description: The park's primary concessioner, Delaware North Companies Parks and Resorts, performed some restoration work at Tuolumne Meadows Lodge in 2008 and 2009. The restoration work included decompacting soil, delineating trails, planting indigenous vegetation, correcting site drainage, and improving the existing service road through camp.

Scheduled/projected completion: 2009.

Agency Name: National Park Service, Yosemite National Park
Project Name: Yosemite Valley Loop Road Rehabilitation

This project repaired and resurfaced existing roadway pavement, improved drainage facilities, and defined roadside parking throughout the project area. No widening or realignment of roadway off of the existing road bench was done. Areas with soft or poorly draining subgrade were excavated and replaced with better foundation materials. Low-lying areas subject to flooding will be evaluated with alternative concepts to determine the potential impacts.

Completion: A Finding of No Significant Impact (FONSI) was signed by the Regional Director in February 2006. Actions were completed in 2008.

Agency Name: National Park Service, Yosemite National Park
Project Name: El Portal Road Improvement Project

Significant damage occurred during the 1997 flood, necessitating an almost complete reconstruction of the El Portal Road. Since then, the NPS has rebuilt the westernmost 6.5 miles of the road — referred to as Segments A, B, and C — but prior to completion, reconstruction of the final one-mile segment of the project, referred to as Segment D, was halted as a result of a successful legal challenge. The court decision directed the NPS to prepare a comprehensive management plan for the Merced Wild and Scenic River before completing road repairs.

Completion: A Finding of No Significant Impact (FONSI) was signed by the Regional Director in July, 2007. Actions were completed in 2008.

Agency Name: National Park Service, Yosemite National Park
Project Name: Tunnel View Overlook Rehabilitation

The overlook was constructed in 1932 during an era that heralded a boom in design and development throughout the NPS, and helped initiate the NPS "rustic design style." Wawona Tunnel and Tunnel

View were determined eligible for listing on the *National Register of Historic Places* in 1986 because of their exemplary design.

The purpose of the Tunnel View Overlook Rehabilitation Project is to remedy longstanding vehicle and pedestrian safety issues, to correct drainage deficiencies, to provide clear circulation patterns for pedestrians and vehicles, to enhance and maintain viewing opportunities for visitors, to provide accessibility to viewing areas, to correct safety problems associated with the Inspiration Point trailhead, and to address sanitation issues, while maintaining the naturalistic, rustic character and integrity of this historic site.

Completion: A Finding of No Significant Impact (FONSI) was signed by the Regional Director in December, 2007. Actions were completed in 2008.

Agency Name: National Park Service, Yosemite National Park
Project Name: Lower Yosemite Falls Project

The Lower Yosemite Fall area is the most highly visited natural feature in Yosemite National Park. The plan rehabilitated and reconstructed the existing system of trails and bridges, relocated the restroom, and removed the existing parking area in the Lower Yosemite Fall area.

Completion: A Finding of No Significant Impact (FONSI) was signed by the Regional Director in May, 2002. Actions were completed in 2004.

Appendix D Work Plan Schedules

Proposed Work Sequence for Vista Management

The following table describes the steps necessary to revegetate vista sites. These actions would occur in conjunction with other vista management actions, but seasonal considerations for revegetation must be made.

Table D-1. Schematic Annual Schedule for Vista Management in Yosemite National Park

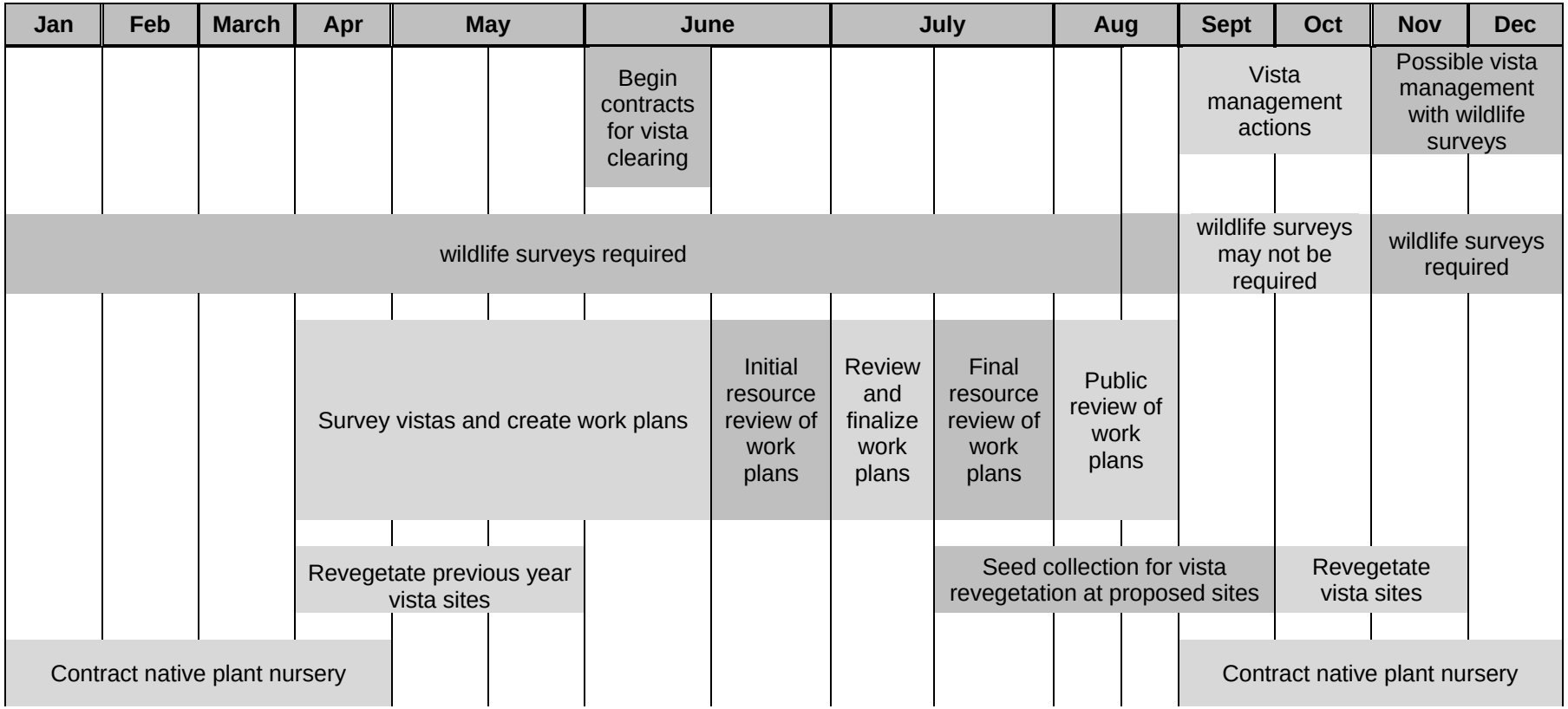


Table D-2. Work sequence for vista management revegetation

Revegetation with Native Plants Process Summary	
Phase	**Tasks**
Work Site Orientation and Inventory	Determine Objectives
	Define preliminary Desired Future Conditions (DFCs)
	Inventory vegetation (including rare and nonnative species), soils, micro-climates
Site Analysis	Identify limiting factors (shade, water, compacted soil, etc.)
	Select native herbaceous and subshrub species
	Identify target plant requirements
Develop Work Plan	Coordinate with Forestry, Fire, and History, Architecture and Landscapes personnel
	Compare and select revegetation strategies
	Finalize DFCs
	Develop and share revegetation plan
Implementation	Develop plant materials nursery contract and oversee work
	Install treatments
	Carry out quality control
Monitoring and Maintenance	Develop monitoring plan based on DFCs
	Collect and evaluate data
	Write monitoring report
	Apply maintenance and corrective measures as needed
	Share lessons learned

SAMPLE
Annual Work Plan

Islands Above the Ice Interpretive Sign (T35) Site Number 103 VRA score: 11 (High)
NAD 1983 UTM Zone 11A X: 299360.375459 Y: 4194751.36034

Site Description

Islands Above the Ice Interpretive Sign is a vista located on Highway 120 one mile east of the turnout for the Dana Fork of the Tuolumne (site number 102). Vistas of Unicorn Peak, Johnson Peak, and Cathedral Peak exist at this sign.

Looking west across interpretive sign (NPS 2009)

Vegetation Ecology

This vista is located in a mixed conifer forest situated in the subalpine vegetation zone. The tree species present include lodgepole pine and whitebark pine. Management recommendations are trees obstructing a vista should be cleared in the middle ground (60-1000 m) and foreground (0-60 meters). Snags are of particular importance in these communities and could be removed only if doing so was critical to the vista. The vista is proximal to a riparian zone and additional protection measures apply.

Management Prescription

Tree Species	Less than 6" dbh	Less than 20" dbh	Greater than 30" dbh	Greater than 40" dbh	Total
Lodgepole Pine	119	116	-	-	235

Comments:

1.) Approximately 10% of the trees less than 6" dbh are saplings.
2.) Snags exist on this site and should remain.
3.) Wilderness boundary is 60m from centerline of road.No actions are to take place in wilderness. Feather cut outside of wilderness boundary.

This is a static vista; the viewing area is limited to an area 30 meters wide. In order to create a natural appearance, the edges of the forest adjacent to the vista must be feathered up to 30 meters on each side.

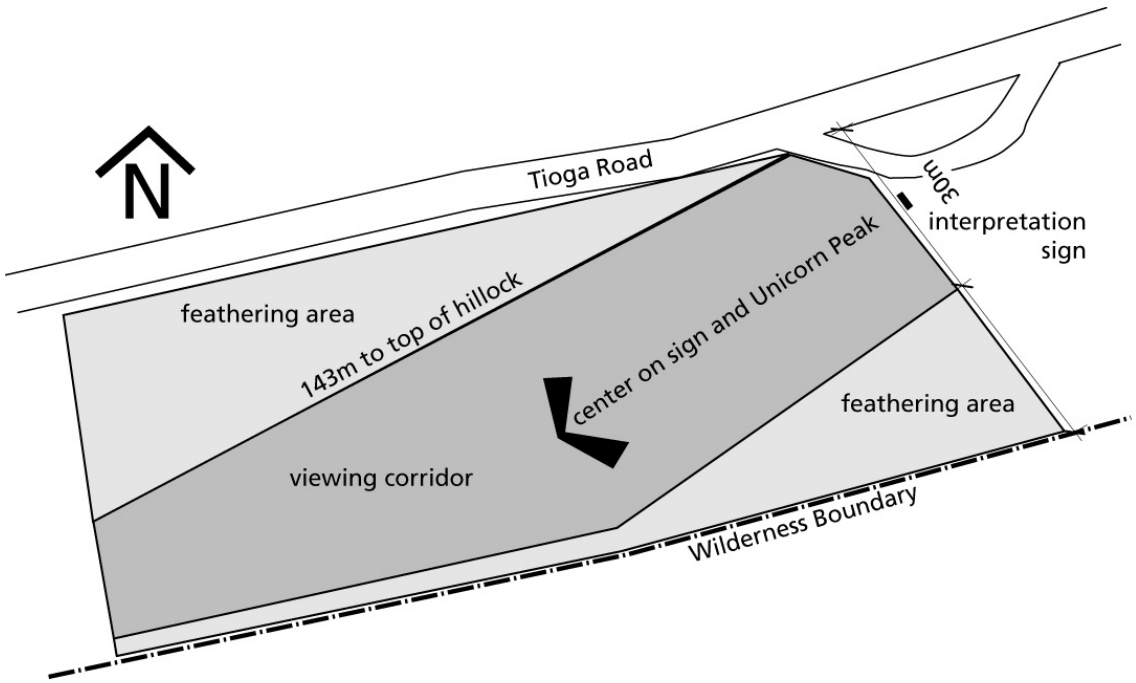
Management Methods

When operating trucks or heavy equipment in meadow or other soils susceptible to compaction, steps will be taken to distribute the weight and avoid compaction. Clearing of the vista will produce slash. No slash will be left in a meadow. Some debris will be chipped, with chips either remaining on site as mulch (no more than one inch deep), or hauled away. The small diameter vegetation is to be lopped and scattered such that any saw marks are not visible from the vista. Logs and greater diameter brush can be either hauled to the nearest burn pile, or chipped using a masticator. Up to about five logs per acre could remain on site, as specified by the FMP.

Post Clearance Site Restoration

The work area will be restored. Any tracks left by machinery or workers must be decompacted, recontoured, and duffed. Stumps must remain in place to provide soil stability, and flush cut to preserve a natural esthetic. Check dams or wattles built out of logs or slash; they should be positioned to catch eroding sediment. Any plants that could be impacted by heavy machinery must be removed before work begins, and replanted afterward. Damage to trees and shrubs should be noted for replacement.

Revegetation could occur on a later date with either seed or container plants at the appropriate season. Native seed (that of grasses and herbaceous plants) will be collected prior to work and dispersed within the work area when felling is completed. In addition, due to the steepness of the bank immediately beneath the viewing area, seeding and duffing will be done and erosion mitigation measures taken as needed.



Site Work Diagram - #102 Islands above the Ice
Not to Scale

Facilities and Infrastructure Observations

Although outside the scope of vista management, infrastructure issues will be noted. Both an interpretive sign and a vista marker are extant at the site. A portable restroom exists at this site during the high visitor use months each summer. Twenty cars can be accommodated at this vista's paved turnout. A more permanent solution to the restroom should be sought. This is an open area next to a meadow where a permanent or temporary structure stands out.

Continued Maintenance

The site shall be evaluated and maintained on an annual basis. Such maintenance includes the felling of trees less than 6" dbh that encroach on the vista and revegetation of eroded slopes or any areas denuded by the initial clearing process.

Appendix E Visual Resource Assessment Scores for All Sites

From November 2008 through November 2009, technicians visited sites throughout the park to obtain a general idea of the condition of viewing areas within the park. They intended to obtain a representative sample from multiple areas in order to develop a framework for analysis, rather than a complete, comprehensive survey. The inventory data is available in the document *Vista Site Summaries* (NPS 2010b).

The attached table includes a list of sites assessed and their Visual Resource Assessment scores.

Table E-1. VRA scores for all sites assessed in 2009

#	Site ID#	Site Name	VRA Score
1	79	Washburn Point	17.25
2	146	Valley View	16
3	116	Olmsted Point	15.25
4	49	Tunnel View	15.2
5	33	East end of El Capitan Meadow	14.5
6	34	Bridalveil Fall view, Hanging Valley interpretive sign	14
7	6	Stoneman Meadow Boardwalk	13.5
8	28	Sentinel Bridge	13.5
9	83	Bridalveil Fall View, Big Oak Flat	13.5
10	81	Glacier Point	13.25
11	38	Bridalveil Straight interpretive sign	13
12	108	Pothole Dome	13
13	130	Clark Range view (T11)	12.5
14	1	Residence 1	12.25
15	42	Wosky Pond	12.25
16	118	Clouds Rest view (exfoliating granite T23)	12.25
17	11	Church Bowl picnic area	12
18	17	Hutchings View A	12
19	25	Stoneman Bridge	12
20	44	Ferry Bend	12
21	158	Hutchings View B	12
22	31	West end of Leidig Meadow	11.75
23	121	Tioga Road, Cones and Needles interpretive sign (T18)	11.75
24	141	Crane Flat Tower	11.75
25	12	Sentinel Bridge Parking	11.5
26	23	Swinging Bridge	11.5
27	24	Sentinel Meadow Boardwalk	11.5

Table E-1. VRA scores for all sites assessed in 2009

#	Site ID#	Site Name	VRA Score
28	80	Glacier Point amphitheater	11.5
29	100	Dana Meadow interpretive sign	11.5
30	114	West of Tenaya Lake (T25)	11.5
31	227	Ahwahnee Meadow Peeling Dome interpretive sign	11.5
32	22	Sentinel Beach	11.25
33	159	Ahwahnee Lounge	11.25
34	70	Big Turnout south of Wawona Tunnel	11
35	84	Half Dome Overlook (B4)	11
36	103	Islands Above the Ice interpretive sign (T35)	11
37	47	Superintendent's Bridge, flood sign	10.75
38	10	Northside Dr. & Ahwahnee Meadow	10.5
39	20	Chapel	10.5
40	32	Four Mile trailhead	10.5
41	93	Hetch Hetchy Dam	10.5
42	101	Dana Gibbs View (T36)	10.5
43	107	Tuolumne Meadows trail to Parsons Lodge	10.5
44	134	Siesta Lake	10.5
45	156	Roosevelt turnout	10.5
46	16	Ahwahnee Hotel front lawn	10.25
47	36	Big Oak Flat Valley view	10.25
48	40	Cathedral Beach	10.25
49	87	North Country view	10.25
50	152	Bridalveil Fall, point 1 (S Side Dr)	10.25
51	161	Ahwahnee dining room	10.25
52	48	Lower Falls Bridge	10
53	82	Cascade Fall 120 A	10
54	113	Tenaya Lake east beach	10
55	149	Wawona Point	10
56	26	Housekeeping Beach	9.75
57	27	Curry Village parking	9.75
58	39	Visitors Center benches	9.75
59	164	Old Wawona Road (point 3)	9.75
60	169	Old Wawona Road (point 5)	9.75
61	174	Mount Conness view (T27)	9.75
62	175	Soda Springs	9.75
63	224	Curry ice skating rink	9.75
64	226	Cathedral Beach parking near restroom	9.75
65	3	El Capitan Postage	9.5
66	19	Yosemite Lodge portico	9.5
67	43	Bridalveil Meadow	9.5
68	46	Curry Amphitheater	9.5
69	98	Tioga Pass entrance station (T39)	9.5

Table E-1. VRA scores for all sites assessed in 2009

#	Site ID#	Site Name	VRA Score
70	102	Dana Fork of the Tuolumne	9.5
71	228	Ahwahnee Winter Club Room	9.5
72	15	Mirror Lake Dam interpretive sign	9.25
73	85	Big Meadow Overlook	9.25
74	86	San Joaquin Overlook	9.25
75	105	Little Blue Slide (T33)	9.25
76	162	Old Wawona Road point 1	9.25
77	41	Devil's Elbow	9
78	165	Old Wawona Road (point 4)	9
79	18	Yosemite Falls view	8.75
80	76	Glacier Point Sierra interpretive sign	8.75
81	77	G1 Road Guide Marker	8.75
82	106	Lembert Dome parking	8.75
83	136	South Fork Bridge (T5)	8.75
84	157	Old Hutchings view (Cedar Cottage)	8.75
85	160	Ahwahnee solarium	8.75
86	170	Old Wawona Road (point 6)	8.75
87	171	Old Wawona Road (point 7)	8.75
88	172	Half Dome view, near Snow Creek	8.75
89	14	Happy Isles Bridge	8.5
90	21	El Capitan Postage Beach	8.5
91	45	Mirror Lake interpretive sign	8.5
92	30	Illilouette Falls view	8.25
93	74	Fire interpretive sign	8.25
94	96	Hetch Hetchy (H3)	8.25
95	117	Large turnout east of May Lake	8.25
96	128	West of Lukens Lake trailhead (T13)	8.25
97	2	Cook's Meadow south boardwalk	8
98	7	Clarks Bridge	8
99	35	Cascade Fall view	8
100	92	Housekeeping Bridge	8
101	183	Sentinel Ridge, below dome	8
102	229	Elephant Rock View (B1)	8
103	50	Wawona Point	7.75
104	97	Hodgdon Meadow	7.75
105	127	Tioga Road turnout	7.75
106	138	Gin Flat (T4)	7.75
107	163	Old Wawona Road (point 2)	7.75
108	145	Foresta burn overlook	7.5
109	173	Half Dome view, east of Coyote Rocks	7.5
110	176	Parsons Lodge door	7.5
111	225	Cathedral Spires turnout	7.5

Table E-1. VRA scores for all sites assessed in 2009

#	Site ID#	Site Name	VRA Score
112	5	Clark Range (G6)	7.25
113	29	Vernal Fall footbridge	7.25
114	37	Bridalveil Fall footbridge	7.25
115	94	Hetch Hetchy, northwest side of	7.25
116	95	Hetch Hetchy, 2 miles south of	7.25
117	115	East of Olmsted Point	7.25
118	129	T12 Road Guide Marker	7.25
119	8	Orchard behind DNC Stables	7
120	57	Wawona Hotel	7
121	75	Avalanche Creek turnout	7
122	90	Sugar Pine Bridge	7
123	124	Summit Meadow	7
124	131	West of Lukans Lake (Clark Range)	7
125	132	Clark Range turnout	7
126	178	Nevada Fall Bridge	7
127	180	Top of Vernal Fall	7
128	88	Meadow (G7)	6.75
129	89	Ahwahnee Bridge	6.75
130	120	Porcupine Flat trailhead	6.75
131	125	Waterfall (T16)	6.75
132	140	Crane Flat Meadow	6.75
133	4	Black Spring	6.5
134	51	Mariposa Grove Museum, east of	6.5
135	179	Top of Nevada Fall	6.5
136	71	Wawona Road, 2 miles south of tunnel	6.25
137	72	Wawona Road, 2.25 miles south of tunnel	6.25
138	78	Chinquapin, 1 mi. north of	6.25
139	122	Yosemite Creek drainage overlook	6.25
140	133	Turnout west of White Wolf	6.25
141	135	Fire management turnout	6.25
142	181	Lady Franklin Rock	6.25
143	52	Grizzly Giant	6
144	142	Tuolumne Grove (1)	6
145	143	Tuolumne Grove (2)	6
146	144	Tuolumne Grove (3)	6
147	123	Yosemite Creek turnout	5.75
148	13	Happy Isles interpretative sign	5.5
149	111	Ghost Forest	5.5
150	139	T3 Road Guide Marker	5.5
151	56	Wawona Golf Course, south end	5.25
152	65	Alder Creek trailhead	5.25
153	59	Texas turnout	5

Table E-1. VRA scores for all sites assessed in 2009

#	Site ID#	Site Name	VRA Score
154	66	Deer Lick	4.75
155	109	Daff Dome turnout	4.5
156	110	Turnout west of Tenaya Peak	4.5
157	126	Yosemite Creek trailhead	4.5
158	60	Panetta's turnout	4.25
159	61	Mosquito helispot turnout	4.25
160	62	North of Mosquito helispot	4.25
161	63	Chain Control point, north of Wawona	4.25
162	64	Mosquito Creek trailhead	4.25
163	67	Wawona, 7 miles north of	4.25
164	112	Pywiak Dome turnout	4
165	55	South of golf course at Stud Horse	3.75
166	53	Angels Wash	3.5
167	54	Stud Horse	3.5
168	58	Turnout at Chilnualna Falls road	3.5
169	68	North Strawberry Creek	3.5
170	69	Rail Creek	3.5
171	104	T34 Road Guide Marker	3.5
172	99	Mono Pass trailhead	3
173	119	Tuolumne just west of May Lake	3
174	91	El Capitan Meadow, east end	Not scored
175	147	Wawona Point, from west	Not scored
176	148	Wawona Point, from north	Not scored
177	150	Mariposa Grove Museum, south of	Not scored
178	151	Mariposa Grove Grizzly Giant	Not scored
179	230	Yosemite Falls Trail 1	Not scored
180	234	Leidig Meadow, west end	Not scored
181	235	G3 Road Guide Marker	Not scored

Appendix F Parkwide Nonnative Plant List

Scientific Name	Common Name
*Agrostis capillaris**	colonial bentgrass
*Agrostis gigantea**	redtop
*Agrostis stolonifera**	creeping bentgrass
*Ailanthus altissima**	tree-of-heaven
Aira caryophyllea	European hairgrass
*Amaranthus albus**	prostrate pigweed
Anagallis arvensis	scarlet pimpernel
Anthemis cotula	stinkweed
Anthriscus caucalis	burr chervil
Arabidopsis thaliana	mouse ear cress
*Arundo donax**	giant reed
Avena barbata	slender wild oat
Avena fatua	wild oat
Bidens tripartita	threelobe beggarticks
Brassica nigra	black mustard
Brassica rapa	field mustard
Briza minor	little quaking grass
Bromus arenarius	Australian brome
Bromus catharticus	rescue grass
Bromus diandrus	ripgut brome
*Bromus hordeaceus**	soft brome
Bromus inermis ssp. *inermis**	smooth brome
Bromus japonicus	field brome
Bromus madritensis ssp. *rubens*	foxtail chess
Bromus secalinus	rye brome
Bromus sterilis	poverty brome
Bromus tectorum	cheat grass
Capsella bursa-pastoris	shepherd's purse
Carduus pycnocephalus	Italian thistle
Centaurea cyanus	bachelor's button
Centaurea maculosa	spotted knapweed
Centaurea melitensis	Tocolote
Centaurea solstitialis	yellow star-thistle
Cerastium fontanum ssp. *Vulgare*	big chickweed
Cerastium glomeratum	sticky chickweed
Chamomilla suaveolens	pineapple weed
*Chenopodium album**	lamb’s quarters
*Chenopodium botrys**	Jerusalem oak
*Cirsium vulgare**	bull thistle
Cnicus benedictus	blessed thistle
Convolvulus arvensis	Field bindweed
*Coreopsis lanceolata**	lanceleaf tickseed

Crepis capillaris	smooth hawksbeard
Cynodon dactylon	Bermuda grass
*Cynoglossum officinale**	gypsyflower
Cynosurus echinatus	hedgehog dogtail
*Dactylis glomerata**	orchard grass
Dianthus barbatus ssp. *barbatus*	sweet William
*Digitalis purpurea**	foxglove
Digitaria ischaemum	smooth crabgrass
Digitaria sanguinalis	hairy crabgrass
*Echinochloa crus-galli**	barnyard grass
Epipactis helleborine	broadleaf helleborine
Eragrostis cilianensis	lovegrass
Erigeron annuus	eastern daisy fleabane
Erigeron strigosus	prairie fleabane
Erodium botrys	long-beaked stork's bill
Erodium brachycarpum	short fruit stork's bill
Erodium cicutarium	redstem stork's bill
*Festuca arundinacea**	tall fescue
*Festuca pratensis**	meadow fescue
Filago gallica	narrow-leaved herba impia
Gaillardia pulchella	firewheel
Galium parisiense	wall bedstraw
Genista monspessulana	French broom
Geranium dissectum	cutleaf geranium
Geranium robertianum	Robert geranium
Glechoma hederacea	ground ivy
Hedera helix	English ivy
Herniaria hirsuta ssp. *cinerea*	rupture wort
Herniaria hirsuta ssp. *hirsuta*	hairy rupture wort
Hirschfeldia incana	shortpod mustard
*Holcus lanatus**	common velvet grass
Hordeum marinum ssp. *Gussoneanum*	Mediterranean barley
Hordeum murinum ssp. *glaucum*	smooth barley
Hordeum murinum ssp. *leporinum*	leporinum barley
Hordeum murinum ssp. *murinum*	wall barley
Humulus lupulus	hops
Hypericum perforatum	common St. John’s wort
*Hypochaeris glabra**	smooth cat's ear
*Hypochaeris radicata**	hairy cat's ear
*Lactuca serriola**	prickly lettuce
Lamium amplexicaule	henbit dead nettle
Lathyrus latifolius	perennial sweet pea
*Lepidium latifolium**	perennial pepperweed
Lepidium virginicum var. *virginicum*	Virginia pepperweed
*Leucanthemum vulgare**	oxeye daisy
Lolium multiflorum	Italian ryegrass
*Lolium perenne**	perennial ryegrass
Lolium temulentum	darnel
Lunaria annua	annual honesty
Lychnis coronaria	rose campion
Malva nicaeensis	bull mallow

Malva parviflora	cheeseweed
*Marrubium vulgare**	horehound
Medicago lupulina	black medick
*Medicago polymorpha**	California burclover
Medicago sativa	alfalfa
Melilotus alba	white sweetclover
*Melilotus indica**	sourclover
*Melilotus officinalis**	yellow sweetclover
Mentha spicata var. *Spicata**	spearmint
Mollugo verticillata	carpetweed, indian chickweed
*Muhlenbergia schreberi**	nimblewell
Nicotiana acuminata var. *Multiflora*	manyflower tobacco
*Nicotiana glauca**	tree tobacco
Oxalis corniculata	creeping woodsorrel
Panicum miliaceum	broomcorn millet
Parapholis incurva	curved sickle grass
*Parthenocissus vitacea**	woodbine, Virginia creeper
*Phleum pratense**	cultivated timothy
Plantago lanceolata	English plantain
*Plantago major**	common plantain
Poa annua	annual bluegrass
Poa bulbosa	bulbosa bluegrass
*Poa compressa**	Canada bluegrass
Poa nemoralis	wood bluegrass
*Poa palustris**	fowl bluegrass
Poa pratensis ssp. *pratensis**	Kentucky bluegrass
Polycarpon tetraphyllum	four-leaved allseed
Polygonum arenastrum	common knotweed
*Polygonum convolvulus**	black bindweed
Polygonum persicaria	spotted ladysthumb
Polygonum ramosissimum	bushy knotweed
Polypogon maritimus	Mediterranean beard grass
*Polypogon monspeliensis**	annual beard grass
Portulaca oleracea	little hogweed
Ranunculus muricatus	spinyfruit buttercup
Raphanus raphanistrum	jointed charlock
*Raphanus sativus**	radish
*Robinia pseudoacacia**	black locust
*Rubus discolor**	Himalayan blackberry
*Rubus laciniatus**	cutleaf blackberry
Rudbeckia hirta var. *pulcherrima**	black-eyed Susan
*Rumex acetosella**	sheep sorrel
Rumex conglomeratus	dock
*Rumex crispus**	curly dock
*Saponaria officinalis**	Bouncingbet
Secale cereale	cereal rye
Senecio vulgaris	common groundsel
Setaria pumila	yellow foxtail
Setaria viridis	green bristlegrass
Silene gallica	common catchfly
Silene latifolia ssp. *alba*	bladder campion

Sinapis arvensis	charlock mustard
*Sisymbrium altissimum**	tall tumblemustard
Sisymbrium irio	London rocket
Sisymbrium officinale	hedge mustard
Soliva sessilis	field burrweed
Sonchus asper ssp. *asper**	prickly sow thistle
Sonchus oleraceus	common sow thistle
Spergularia rubra	red sandspurry
Stellaria media	common chickweed
*Tanacetum parthenium**	feverfew
Taraxacum officinale	dandelion
*Torilis arvensis**	spreading hedge-parsley/miner's lice
Tragopogon dubius	yellow salsify
Tribulus terrestris	puncture vine
Trifolium dubium	little hop clover
Trifolium hirtum	rose clover
Trifolium pratense	red clover
*Trifolium repens**	white clover
Triticum aestivum	common wheat
Urtica urens	dwarf nettle
Verbascum blattaria	moth mullein
*Verbascum thapsus**	common mullein
Veronica anagallis-aquatica	water speedwell
Veronica arvensis	corn speedwell
Veronica persica	Persian speedwell
Vicia benghalensis	purple vetch
Vicia cracca	bird vetch
Vinca major	greater periwinkle
Viola arvensis	European field pansy
*Vitis vinifera**	wine grape
Vulpia bromoides	brome fescue
Vulpia myuros var. *myuros*	foxtail fescue

* Potential to live in wetlands — obligative wetland species, facultative wetland species, or facultative species. Obligate wetland species almost always live in wetlands. Facultative wetland species usually live in wetlands (estimated probability 67-99%). Facultative species are equally likely to live in wetlands or nonwetlands (estimated probability 34-66%).

Appendix G Work Plan Resource Review Worksheet

YOSEMITE NATIONAL PARK
SCENIC VISTA MANAGEMENT PROGRAM
Work Plan Resource Review Worksheet

Please fill out the appropriate fields for your resource as part of the work plan review process. Your comments will be assessed and appropriate changes made to work plans to avoid adverse impacts.

Then populate the fields on a digital copy, and save on the network in the following location:
U:\EP Commons\Scenic Vista Management Plan\Work Plan Resource Review

Vista Site Name:

Vista Site Number:

Updated Management Prescription:

Insert brief narrative update of the latest tentative management prescriptions planned for the vista site here before visiting the vista site.

Resource Concerns and Recommendations
Please fill out the following fields, and provide a narrative description of any resource observations, concerns, or questions that you have regarding the following resource categories that are relevant to your area of expertise.

Briefly summarize what you observed, state resource concerns that arose, and how resource concerns can be addressed in the field by giving management recommendations.

Resource Specialist Name: **Area of Expertise:**

Today's Date:

Resource Concerns:
Biological: (Vegetation, Wildlife, Forest Ecology)

Recommendations: These should address all of the concerns listed above. They should be concise.

Physical: (Hydrology, Geology, Air Quality)

Recommendations: These should address all of the concerns listed above. They should be concise.

Cultural: (Archeology, Anthropology, Historic Architecture & Landscapes, Visitor Use & Social Sciences)

Recommendations: These should address all of the concerns listed above. They should be concise.

ADDITIONAL SPACE TO STATE YOUR RESOURCE CONCERNS AND RECOMMENDATIONS:
(next pg)

Appendix H Vegetation Management Plan Vegetation Zone Target Conditions

Objectives

In the *Vegetation Management Plan* (VMP), vegetation zone target condition objectives were developed to assist resource managers in determining desired target conditions within plant communities. They were written as the end points for which management will strive. The attainment of these desired states required the consideration of many target community elements, including:

- natural species composition, age structure, and stand density pre Euro-American intervention;
- plant community deviation extent from the preinterference state, including the accumulation of fuels, increased stand density, and the occurrence of insects and disease in artificially high frequencies in some areas; and
- management zone objectives in which the target community is located. For instance, a stand replacing fire might be appropriate in the natural zone, but not in a development zone.

Desired Condition Objectives by Vegetation Zone

Some of the classifications used in the *Vegetation Management Plan* for vegetation zone, or plant community, differ slightly from that of the *Scenic Vista Management Plan*.

Foothill Woodlands

California Black Oak Woodland

- In communities traditionally used by American Indians, maintain the dominance of valued species (such as black oak) by localized exclusion of conifers and understory growth.
- Maintain natural species diversity within an acceptable range of variation.
- Maintain variability that includes both woodland (open canopy) and forest (closed canopy).
- In developed areas, maintain a safe visitor environment.
- Maintain variability that includes both pure and mixed stands.
- Maintain the culturally significant elements of the landscape (including meadows in Wawona and Yosemite Valley).

Interior Live Oak Woodland

- Maintain mixed stands dominated by broadleaved species.
- Maintain species diversity within an acceptable range of variation.
- In developed areas, maintain a safe visitor environment.

Riparian Woodland

- Maintain mixed stands dominated by broadleaved species.
- Maintain species diversity within an acceptable range of variation.

Aspen Forest

- Maintain natural species diversity within an acceptable range of variation.
- Perpetuate communities generally dominated by quaking aspen (*Populus tremuloides)*.
- Maintain variability ranging from open stands to dense groves, with a generally sparse to dense, herbaceous understory.
- Allow ecological processes, such as fire, to continue unimpeded.

Montane Meadows

- Maintain wet meadows with water tables that remain at or near the surface throughout the year, preserving assemblages with native species — generally sedges — predominating.
- Restore, where feasible, wet meadow conditions in sites where humans have intervened.
- Restore and maintain meadow systems, with human-induced conifer invasion held in check (or a dynamic maintained).
- Maintain natural species composition within acceptable natural range of variability.
- Maintain productivity within the acceptable natural range of variability.

Broadleaved Upland Woodlands

- Maintain widely spaced shrubs and trees, with open canopy and as light a ground fuel layer as possible, where open savannah is the normal condition.
- Preserve native species composition, to the maximum extent possible.
- In developed areas, maintain a safe visitor environment.

Montane Chaparral

- Maintain the dynamic between the montane chaparral and Jeffrey pine and other adjacent or intermixed communities.
- Maintain natural species diversity within an acceptable range of variation.

Northern Mixed Chaparral

- Maintain a low proportion of decadent brush.
- Maintain a mosaic of age classes that serves to form natural fuel breaks and preserve species diversity (both plant and wildlife). Maintain natural species diversity within an acceptable range of variation.

Interior Live Oak Chaparral

- Maintain mixed to pure stands generally dominated by interior live oak with variability that ranges from early successional stages to those of closed canopies, perpetual leaf litter, and no understory.

Lower Montane Coniferous Forests

- Restore processes that favor fire tolerant species.
- Maintain natural species diversity and forest structure within an acceptable range .
- Maintain spatial variability that ranges from open to clustered, but not closed, canopy with well developed understory.
- In developed areas, maintain a safe visitor environment.
- Maintain uneven-aged stands, with generally sparse to light understories.
- Maintain fuel loadings that range from sparse to generally light.

- Allow natural processes, including native insects and diseases, to operate essentially unimpeded.
- Monitor nonnative insects, diseases, and air pollution for forest impacts.

Upper Montane Coniferous Forests

- Maintain natural species diversity within an acceptable range of variation.
- In drier areas, restore processes to favor species and communities common under frequent, light surface fires.
- In developed areas, maintain a safe visitor environment, in which generally unevenly aged stands, with highly variable community structure and light to moderate accumulations of fuel, would be maintained.
- Allow natural processes, including insects and diseases, to operate essentially unimpeded. Monitor nonnative insects and diseases for forest impacts.

Subalpine Coniferous Forests

Desired conditions for this zone are to perpetuate communities of generally pure stands, with sparse understory and fuel accumulation, and to allow ecological processes, such as fire and native insects, to continue unimpeded.

Appendix I Fire Management Plan Vegetation Species Composition Target Conditions

Table I-1. Stem density and species composition target conditions, Fire Management Plan (NPS 2004b)

Vegetation Type/Monitoring Unit		Stem Density			Species Composition		
		Desired Condition	Current Condition	Objective Achieved Yes, No, or NC*	Desired Condition	Current Condition	Objective Achieved Yes, No, or NC*
Red Fir Forest	Smaller Trees*	20-202 trees per acre	38.4 trees per acre (+/- 36.6)	NC	70-100% fir 0-30% pine	100% fir (56% red, 44% white)	Yes
	Larger Trees*	4-30 trees per acre	20.2 trees per acres (+/- 6.7)	Yes		100% fir (70% red, 30% white)	Yes
Montane Chapparral	Smaller Trees	4-61 trees per acre	No data		60-80% pine, 20-40% fir	No data	
	Larger Trees	2-20 trees per acre					
Giant Sequoia Mixed Conifer	Smaller Trees	20-101 trees per acre	116 trees per acre (+/- 43.0)	NC	35-65% fir, 0-20 % sequoia, 40-55% pine	73% fir, 11% pine, 11% cedar, 2% sequoia, 2% dogwood	No
	Larger Trees	4-26 trees per acre	10.4 trees per acre (+/- 2.6)	Yes		55% pine, 23% sequoia, 20% fir, 3% cedar	No, but very close
White Fir/Mixed Conifer Forest	Smaller Trees	20-89 trees per acre	97.1 trees per acre (+/- 25)	NC	40-65% fir, 15-50% pine, 0-10% cedar	69% fir, 20% cedar, 5% pine	No
	Larger Trees	4-20 trees per acre	13 trees per acre (+/- 2.9)	Yes		49% fir, 35% pine, 16% cedar	Yes
Ponderosa Pine/Mixed Conifer Forest	Smaller Trees	4-91 trees per acre	409.8 trees per acre (+/- 311)	NC	60-95% pine, 15-40% cedar, 1-10% oak	64% fir, 16% cedar, 17% pine, 3% oak	No
	Larger Trees	4-30 trees per acre	15.2 trees per acres (+/- 5.7)	Yes		74% pine, 20% cedar, 7% oak	Yes
Ponderosa Pine/Bear Clover Forest	Smaller Trees	No management objectives in Yosemite Fire Management Plan	165.4 trees per acre (+/- 79.3)		No management objectives in Yosemite Fire Management Plan	41% cedar, 34% pine, 19% oak, 6% fir	
	Larger Trees		8.8 trees per acre (+/- 2.4)			68% pine, 30% cedar, 3% oak	

NC = No Confidence, assuming 90% Confidence Interval; Larger Trees are greater than 31.5 inches diameter at breast height; Smaller Trees are less than 31.5 inches diameter at breast height (which can still be quite large).

Table I-2. Fuel loading and canopy gap distribution target conditions, Fire Management Plan

Vegetation Type/Monitoring Unit	Fuel Loading			Canopy Gap Distribution		
	Desired Condition	Current Condition	Objective Achieved Yes, No, or NC*	Desired Condition	Current Condition	Objective Achieved Yes, No, or NC*
Red Fir Forest	1-25% of area has 5-30 tones/acre 30-70% of area has 30-60 tons/acre 5-20% of the area has greater than 60 tons/acre			70-95% of gaps are 0.1 to 1 hectare in size 5-30% of gaps are 1-10 hectare Less than 1% of gaps are 10-100 hectare. 0-1% of the gaps are less than one year old.	No data	
Montane Chaparral	1-30% of area has 5-30 tons/acre 25-75% of area has 30-60 tons per acre 5-20% of area has greater than 60 tons/acre	No data		Not applicable – woodland savannah type	No data	
Giant Sequoia Mixed Conifer	20-40% of area has 5-3- tons per acre 20-50% of area has 30-60 tons/acre 5-20% of area has greater than 60 tons per acre	8% of plots have 5-30 tons/acre 56% of plots have 30-60 tons/acre 46% of plots have greater than 60 tons/acre	No Yes No	75-95% of gaps are 0.1 to 1 hectare 5-25% of gaps are 1-10 hectare Less than 1% of gaps are 10-100 hectare	No data	
White Fir/Mixed Conifer Forest	20-40% of area has 5-3- tons per acre 20-50% of area has 30-60 tons/acre 5-20% of area has greater than 60 tons per acre	46% of plots have 5-30 tons/acre 38% of plots have 30-60 tons per acre 17% of plots have greater than 60 tons per acre	No Yes Yes	75-95% of gaps are 0.1 to 1 hectare 5-25% of gaps are 1-10 hectare Less than 1% of gaps are 10-100 hectare	No data	
Ponderosa Pine/Mixed Conifer Forest	20-40% of area has 5-3- tons per acre 20-50% of area has 30-60 tons/acre 5-20% of area has greater than 60 tons per acre	Not enough plots have been treated to determine if we meet these objectives		75-95% of gaps are 0.1 to 1 hectare 5-25% of gaps are 1-10 hectare Less than 1% of gaps are 10-100 hectare	No data	
Ponderosa Pine/Bear Clover Forest	No management objectives in Yosemite Fire Management Plan	50% of plots have 5-30 tons/acre 28% of plots have 30-60 tons/acre 22% of plots have greater than 60 tons/acre		No management objectives in Yosemite Fire Management Plan	No data	

NC = No Confidence, assuming 90% Confidence Interval; Larger Trees are greater than 31.5 inches diameter at breast height; Smaller Trees are less than 31.5 inches diameter at breast height (which can still be quite large).

Appendix J Tree Age Estimation

A reasonable tree age determination estimate would be made by the site planner, and reviewed through the work plan review process. Methods for estimating tree age could vary, but consensus among technical reviewers would have to be achieved for trees larger than 80cm (30" dbh). If consensus is not arrived at, a more definitive method such as coring could be used, but such invasive and expensive methods would be used only as a last measure.

Tree Age Estimation Techniques

Both visual and technical methods for estimating tree age would be employed. These include the methods listed below.

Visual Estimation

Large trees in question could be examined for old age tree characteristics, which include thin bark, spiral growth form, flat-top crown, strip-bark growth form, large diameter secondary branches in relation to the main bole, erosion around root crown, deadwood in crown, and small amount of foliage in relation to tree size. These characteristics can be found individually or in combination (Fritts 1989).

Whorl Counts

Tree age can be inferred by counting tree whorls and comparing the result to a known age-to-branch whorl relationship. Whorl counts are best applied when the physical characteristics of the tree stand are relatively homogeneous, and is often most reliable for younger trees. Comparison with tree-ring data would determine measurement error.

Tree Height Examination

Tree age can be inferred by examining tree height and comparing the result to a known age-to-height relationship. This tree age estimation technique is most reliable for youngish trees at sites that have relatively homogeneous physical characteristics.

Tree Ring Diameter Examination

Tree age can be validated with more and more precision by tracking the age and diameter of trees felled for vista management, hazard tree removal, fire operations, or other park operations. Vista management staff, in conjunction with the park forester, would maintain a table documenting tree species, diameter at breast height (dbh), aspect, moisture stratification, and location of trees felled in Yosemite.

Age Extrapolation from a Limited Core

Extrapolation techniques can be used for tree coring, where limited cores (~2 inches deep) are taken to examine the space between tree rings. If spacing is substantially close, an older tree age estimate can be inferred.